

# Farm Chemicals

Pioneer Journal  
of the Industry

Florida  
Meeting . . . 42  
Mid-South  
Chemical . . . 48  
Soil and  
Farm Chems . . . 50



# DOUBLE VALUE DOUBLE POWER

FOR YOU...

FOR DEALERS...

FOR FARMERS



The need for sulfate of magnesium and sulfate of potash for the profitable production of a wide variety of crops in many farming areas is shown by research carried on by many agricultural colleges.

Consistent advertising in farm papers, and on radio and billboards is telling farmers that the most effective way to supply soluble magnesium and potash is to use a quality mixed fertilizer containing *Sul-Po-Mag*. We're building consumer acceptance for your premium grades — so cash in on the growing demand by using *Sul-Po-Mag* in the fertilizers you make for soils low in magnesium and potash. Identify your brand as a premium grade product by showing soluble magnesium in the analysis on the bag . . . *N-P-K*.  
*Mg*

**PUT IT IN THE BAG**

**PUT IT ON THE BAG**

## DOUBLE POWER

*Sul-Po-Mag* supplies both sulfate of magnesium and sulfate of potash in balanced combination and in water-soluble form. It is used by leading fertilizer manufacturers in the production of fertilizers that make for sales in the market and profits.

## DOUBLE VALUE

*Sul-Po-Mag* contains double value. It provides the extra ingredients that make your fertilizer a premium quality grade you and your dealers can sell with pride and confidence. It supplies the extra ingredients that bring to you many dollars of extra profit for small additional cost.

### AT COOKSTAD, NEW MEXICO

At Cookstad, New Mexico, the POTASH DIVISION mines and refines these quality materials for fertilizer manufacturers —

- Muriate of Potash,
- Sulfate of Potash,
- Sul-Po-Mag*,

# THE TREND IS TO

# dieldrin:

## for effective, long-lasting foliage pest control

More growers than ever before are finding long-lasting dieldrin one of the most effective insecticides for control of destructive foliage pests. Dieldrin controls such pests as lygus bugs, stink bugs, armyworms, cabbage loopers, potato flea beetles and many others.

Dieldrin is long lasting . . . even rain and hot weather cannot discourage dieldrin's staying power. Dieldrin can be applied as a spray or dust . . . any way you apply it, it's easy to use.

Shell Chemical Corporation provides you with the finest in technical service . . . and field representatives who work with growers, county agents and extension entomologists. To help build up your sales, powerful national advertising timed for specific application pre-sells your customers. Complete technical information is available. Write to:



**SHELL CHEMICAL CORPORATION**

AGRICULTURAL CHEMICAL SALES DIVISION  
460 Park Avenue, New York 22, New York



# Farm Chemicals

APRIL, 1956

No. 4

Vol. 119

Pioneer Journal of Farm Chemicals Industry, Est. 1894

## INDUSTRY NEWS

Business and Management .....	8	Government .....	29
People .....	26	Associations and Meetings ..	31
Calendar .....	28		

## FEATURES

NAC Says 'Read the Label' .....	43
MWSIC Joint Meeting .....	47
Mid-South Chemical Corp ... Growing with Nitrogen ..	48
Atoms and Farm Chemicals .....	50
<i>George Peter</i>	
New Midland Lab Opened by Dow .....	64
Salesmen and Safety; Long Term Farm Aid .....	66

## DEPARTMENTS

Reader Service .....	33	Chemicals .....	53
Viewing Washington		Pest Reports .....	56
On Agriculture .....	37	Equipment & Supplies .....	59
On Business .....	38	Suppliers' News .....	61
Patent Reviews .....	52	Fertilizer Materials Market ..	62
<i>Dr. Melvin Nord</i>			
Buyers' Guide .....	67	Statistics .....	63

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Business Publications Audit

A magazine national in scope and circulation and devoted to manufacturers, mixers and formulators of plant foods and pesticides. It has a free controlled circulation within specified segments of the industry.

Subscription rates to all others are: U.S., its possessions, Canada, Cuba and Panama—\$6.00; Mexico and foreign: \$7.50. Single copy—\$5.00. Back Numbers \$1.00.

Published monthly by Ware Bros. Company, 317 N. Broad St., Philadelphia 7, Pa.  
Telephone MARKet 7-9405

Acceptance under Section 34.64 P. L. & R., authorized

## In this issue . . .

Safety with pesticides was featured at NAC's Hollywood Beach meeting but shared the spotlight with statements on new markets for control chemicals.

Various speakers viewed the potentials offered by an expanded highways program, fungicide development, weed control, systemics and other factors. A special event was presentation of a gift to Mrs. Laura B. Arrington, soon to retire after 25 years of service in the Commerce Department. For FC coverage of the convention, turn to page 43.

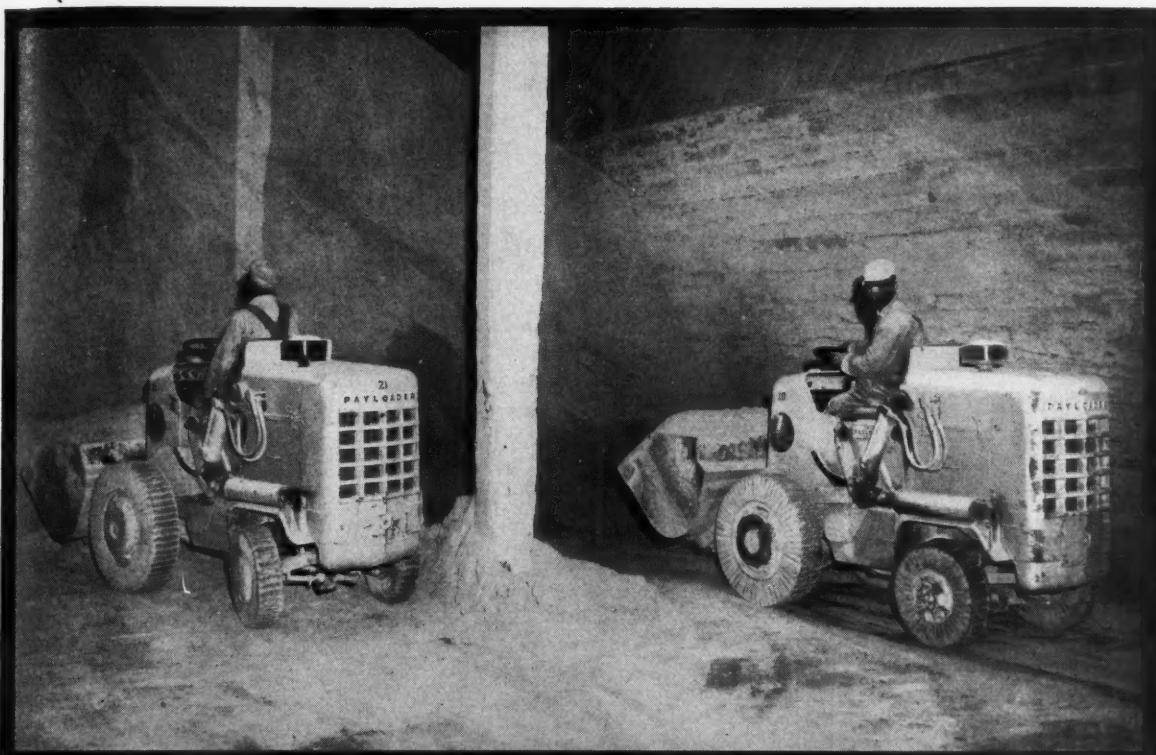
On page 47 we have culled a few of the contributions released at the recent MWSIC meeting. Speakers on the program covered phosphorus utilization, application equipment, use of an electronic brain in farm planning and a variety of other subjects.

It's difficult to keep up to date on activities at Mid-South Chemical but, on page 48, we have attempted to trace the origin and development of this concern in a brief article. For current news from the Big-N firm, see the news section.

The applications of atomic energy are of ever increasing interest, and George Peter, on page 50, reviews possible applications in the farm chemicals industry. This is concerned strictly with power—not radioactivity or isotopes. Although no radical changes are envisioned, the harnessing of the atom for production of nitrogen materials is an intriguing possibility.

## Cover story

From a 1,000 gallon trailer tank, Mid-South Chemical Corp.'s Big N anhydrous ammonia is blown through a hose into a tractor mounted applicator tank. See page 48 for a story on the growth of this progressive NH<sub>3</sub> distributor and its rapidly expanding operations.



## 2 new-design PAYLOADER® shovels do the work of 4 previous units

The new-design model HA "PAYLOADER" has already proven that it is the production champion in its class. Long-time "PAYLOADER" users, as well as new owners, report new highs in production and new lows in bulk-material handling costs with the new HA. A typical report is from G. N. Williams, Supt. of Fertilizer Division of Planters Cotton Oil & Fertilizer Co. of Rocky Mount, N. C., who says, "On manufacturing operations two new-design 'PAYLOADER' shovels are doing the job of 4 previous units. These new HA's load faster and easier, travel faster with better operator vision and increased operator safety. On manufacturing operation, these two HA's move about 400 tons under a good day's run on an average haul of 75 feet. We are still operating three older 'PAYLOADER' shovels purchased in 1946."

If you have any bulk materials to scoop-up, carry, load, dump, stockpile or spread, you should find out how the new-design model HA or a larger "PAYLOADER" model can help. There's a Hough Distributor ready to show you.



**For higher lifts and  
more capacity  
the new model HAH  
1 cu. yd. capacity**

**THE FRANK G. HOUGH CO.**  
704 Sunnyside Ave., Libertyville, Ill.

Send data on Model HA (18 cu. ft.)  
 Send data on Model HAH (1 cu. yd.)  
 On larger models up to 2 cu. yd.

Name .....

Title .....

Company .....

Street .....

City .....

State .....



**PAYLOADER®**  
MANUFACTURED BY  
THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL.  
SUBSIDIARY-INTERNATIONAL HARVESTER COMPANY



# NEW BAUGHMAN

Compare Quality and Prices...

## THE NEW **BAUGHMAN K-5**

### LIME and FERTILIZER BODIES

#### MORE RUGGED BODY

- Reinforced Top Edge
- Extended Jacks for full side support
- Internal Bracing

#### CONVEYORS

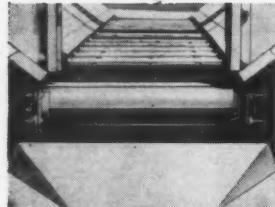
#### YOUR CHOICE OF 3 CONVEYORS

#### YOUR CHOICE OF 3 DRIVES

Each designed for a definite job

Ask for our recommendations

#### DRIVES



#### DRAG CHAIN CONVEYOR

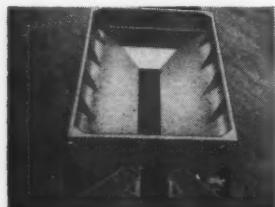
20" wide. New, heavy duty — having two 20,000 lb. test malleable block chains, welded together with 4" spaced cross drags.

#### CHAIN BELT CONVEYOR

12" wide. Provides even flow of material to distributor. Links tend to break up small lumps, eliminating endgate plugging. Requires no shields, compartments or chokes. Positive sprocket drive.

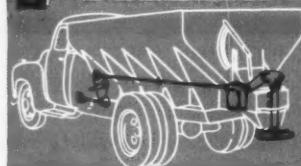
#### BELT CONVEYOR

20" wide. Provides smooth even flow of material, even in smallest quantities. Double corrugated drum drives give more belt pull. Needs at least one compartment to ease load on belt. For dry material.



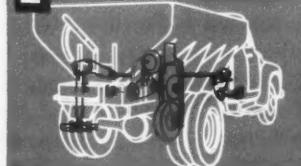
1 Power-take-off driven Distributor and Power-take-off driven Conveyor Drives direct to heavy 44-1 sealed gear case, mounted left or right, and by short #60 chain to distributor case. Has two speeds on conveyor and distributor. (High) for Lime; (Low) for Fertilizer. Has 1-3/16" drive shafts. All bearings sealed against fertilizer.

#### 1 PD-PC DRIVE



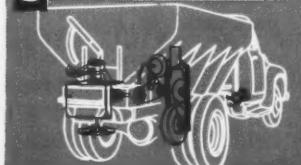
2 Power-take-off driven Distributor and Ground drive Conveyor. Drive can be mounted left or right. Has two speeds. (High) for lime and (Low) for fertilizer. Patented Baughman Ground drive Conveyor gives an even discharge of material in any gear or speed of travel. (Actually Ground Driven.) GC Models have SPREADING CHART showing accurate endgate settings for volume.

#### 2 PD-GC DRIVE



3 Hydraulic motor which drives Distributor is powered by hydraulic pump on power-take-off. Baughman Ground drive powers Conveyor.

#### 3 HD-GC DRIVE

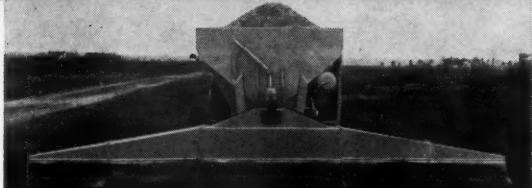


# BAUGHMAN

The pioneer and largest manufacturer by far of lime and fertilizer spreading equipment.

# SPREADERS

WE HAVE NO COMPETITION!



**MODEL 235** →  
**ATTACHMENT**  
**SPREADER**

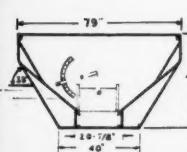
(Optional) Holds material close to the ground. Photo shows open position (less than 8') for highway travel.

Rugged on top! Durable on the side! The rolled top edges are reinforced with 2" square tubular steel, protecting the body from denting by end loaders and shovels. Welded external jacks provide full-length reinforcement and support of body. Welded internal bracing in same positions provides full load strength under all operating conditions. Strongest body ever built!

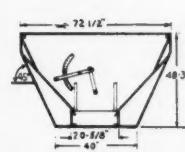


Body styles and widths available in Chain Drag and Belt Conveyor Models.

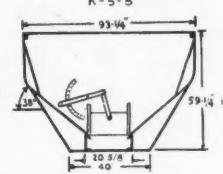
K-5-6



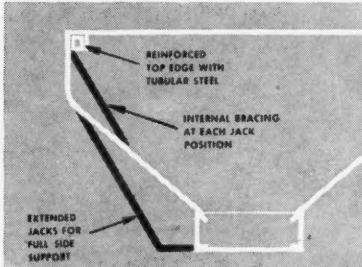
K-5-5



K-5-5



Chain Belt Conveyor Models also available in three sizes with 12 5/8" Endgate and 8" narrower body.



**STRONGEST  
SPREADER  
BODY  
EVER  
BUILT!**

## CHECK THESE LOW PRICES!

**E  
X  
A  
M  
P  
L  
E  
S**

**10' MODEL K-5 CHAIN  
PD-PC Drive —**

Power-take-off driven Distributor  
Power-take-off driven Conveyor  
Body Price ..... \$450.00  
Drives ..... 250.00  
TOTAL \$700.00\*

235 Attachment 185.00

**10' MODEL K-5 CHAIN  
PD-GC Drive —**

Power-take-off driven Distributor  
Ground drive Conveyor  
Body Price ..... \$450.00  
Drives ..... 500.00  
TOTAL \$950.00\*

185.00

**10' MODEL K-5 CHAIN  
HF-GC Drive —**

Hydraulic driven Distributor  
Ground drive Conveyor  
Body Price ..... \$ 450.00  
Drives ..... 1050.00  
TOTAL \$1500.00\*

185.00

\*Power-Take-Off, Freight, Mounting and Taxes to be added. Prices F.O.B., Jerseyville, Illinois.

Prices on Belt Chain and Belt Conveyors available on request. All models, except chain belt, available with single or double distributor.



Heavy Duty BULKMOBILE. Huge Capacity (740 Cu. Ft. Cap. shown here). Full hydraulic or gas engine operation with hydraulic conveyor. Ideal as "parent" body for feeding spreaders in the field. All sizes.

**DEALERS WANTED IN SELECTED AREAS**

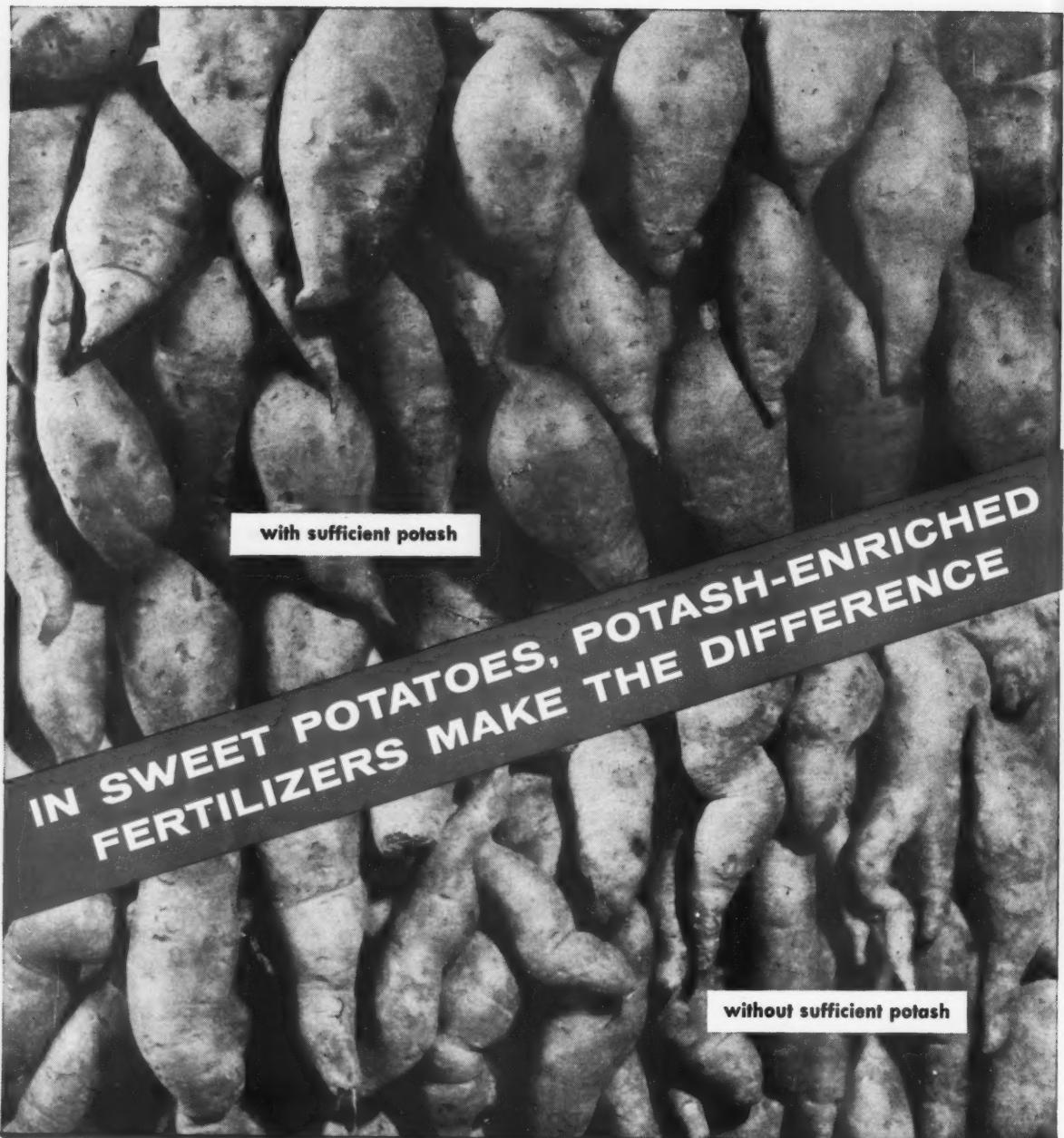
For further details WRITE TO:

**J. E. CADLE, Sales Manager  
Baughman Manufacturing Co., Inc.  
Jerseyville, Illinois**

**Manufacturing Co., Inc.**

**JERSEYVILLE  
ILLINOIS**

*You'll see more Baughmans on the highway than all other makes!*



Using balanced fertilizers farmers are able to improve nutrition-poor soils and produce healthy, vigorous, and profitable crops. Potash is an essential partner in a balanced fertilizer, building crop resistance to disease, improving the quality of the crop, and increasing yield.

U.S.P.'s high-grade muriate of potash has the highest  $K_2O$  content and is free-flowing and non-caking—important advantages in the man-

ufacture of these modern fertilizers which help American farmers to better crops and better incomes.

HIGRADE MURIATE OF POTASH 62/63%  $K_2O$   
GRANULAR MURIATE OF POTASH 60%  $K_2O$  MIN.

UNITED STATES  
POTASH COMPANY  
INCORPORATED



REG. U.S. PAT. OFF.

30 Rockefeller Plaza,  
New York 20, N.Y.  
Southern Sales Office  
Rhodes-Hawley Building,  
Atlanta, Georgia



# High Speed Reduction to Micron Sizes — No Attritional Heat!

An ideal Grinder for the production of Insecticide Compounds from DDT, Aldrin, Dieldrin, BHC, etc.

The increased surface area from this type of grinding means greater bulk, for better dispersion and wettability, requiring less amount of wetting agent.

## ENGINEERING FLUID-JET GRINDING IN "PACKAGE UNITS"

... comes naturally to Sturtevant engineers — with their 75-year tradition of successful solving of dry-processing problems. If you want to accomplish the most effective grouping of a Micronizer® Grinding Machine with necessary compressor, feeder and dust-collector, it will pay you to investigate. Check the coupon on the right for more information.



## Sturtevant Micronizer® Grinding Machines Give Greater Finenesses than Tube or Roller Mills

Look at the record! 30 inch model reduced titanium dioxide to 1 micron and finer at solid feed rate of 2250 lbs. per hr. 24 inch model reduced DDT (50%) to 3.5 average microns — 1200-1400 lbs. per hr. 8 inch model reduced Procaine—Penicillin—to 5 to 20 microns—up to 20 lbs. per hr. Couldn't you use milling performances like these?

**No moving parts.** The particles grind each other. High-speed rotation and violent grinding impact of particles are caused by jets of compressed air or steam at angles to the periphery of the shallow grinding chamber. There are

no problems of attritional heat. Centrifugal force keeps over-sized particles in the grinding zone. Cyclone action in the central section classifies and collects the fines for bagging.

**Instant accessibility, easy cleaning.** Micronizer® Grinding Machines come in seven sizes — each one constructed for quick accessibility and easy maintenance (typified by the "OPEN DOOR" design in other Sturtevant equipment). Grinding chambers range from the 2 in. laboratory size with  $\frac{1}{2}$  lb. per hr. capacity to the 30 in. size which handles up to 3000 lbs. per hr.

\* Registered trademark of Sturtevant Mill Co.

## STURTEVANT Dry Processing Equipment

The "OPEN DOOR" to lower operating costs over more years

CRUSHERS • GRINDERS • MICRON-GRINDERS • SEPARATORS  
BLENDERS • GRANULATORS • CONVEYORS • ELEVATORS

APRIL, 1956

STURTEVANT MILL COMPANY 140 Clayton Street, Boston 22, Mass.  
Please send me your Micronizer® Bulletin   
Also bulletins on machines for:  
GRINDING  PULVERIZING   
SEPARATING  BLENDING  MIXING   
SUPERFINE SELECTING  GRANULATING  CONVEYING

My dry-process materials are: \_\_\_\_\_  
Desired capacity is: \_\_\_\_\_  
Name: \_\_\_\_\_ Title: \_\_\_\_\_  
Firm: \_\_\_\_\_  
Street: \_\_\_\_\_  
Zone: \_\_\_\_\_ State: \_\_\_\_\_  
City: \_\_\_\_\_

# Business & Management

## ... News of the Industry

### Petroleum Chem. to Build NH<sub>3</sub> Plant

Petroleum Chemicals, Inc., jointly owned by Cities Service Co. and Continental Oil Co. has announced plans for construction of \$12.5 million anhydrous ammonia plant at Lake Charles, La. According to F. M. Simpson, vice-president and general manager, the petro-chemical facilities will produce annually 100,000 tons of ammonia.

Construction is scheduled to begin shortly and the plant is expected on stream in the fall of 1957. It will utilize by-product hydrogen supplied by nearby Cities Service and Continental refineries. Most of the ammonia will be sold for fertilizer use, marketed by Mid-South Chemical Corp., also jointly owned by the two petroleum producers.

Organized in 1954, Petroleum Chemicals, Inc. currently operates a butadiene plant at Lake Charles.

### New Units for Miss. Chemical, Mid-South

Construction plans were announced recently by Mississippi Chemical Corp. and Mid-South Chemical Co.

A \$15,000,000 high-analysis fertilizer plant is to be built by Mississippi Chemical at the new Bayou Casotte harbor development at Pascagoula, Miss. C. W. Whittington, president, stated that \$4 million of the stock must be pledged by farmers who will take the output. Construction was also contingent, he said, on Jackson county's providing a deep-water harbor. At present, the Port of Pascagoula is planning a 30-foot channel program in co-

operation with the Federal government.

A new nitrogen storage terminal is being constructed at Pekin, Ill., by mid-South Chemical Co. The unit, with a capacity of 1,100 tons, will serve about 50 central Illinois retail bulk plants. Located near the Cities Service Oil Co. marine terminal at North Pekin, it will include sixteen 30,000 gallon tanks, loading docks, office building, scales and other facilities. Ammonia will be shipped in by barge on the Illinois river.

W. M. Banks, Mid-South's Illinois division manager, will be in charge of the terminal which will employ about 10 men.

### United-Heckathorn Antidote Folder

A new wallet size folder giving information on antidotes and a list of approved safety equipment has been released by United-Heckathorn.

Antidotes are included for acids, arsenicals, bromine compounds, chlorinated hydrocarbons, dinitro and fluorine compounds, mercurials, nicotine and organic phosphates.

The list of USDA-approved safety equipment includes the names and addresses of the manufacturers and distributors of the devices.

Copies are available, free of charge, from United-Heckathorn, 600 South Fourth Street, Richmond, Calif.

### Cominco Products To Aid Deliveries

With incorporation of Cominco Products, Inc. at Olympia, Wash. Consolidated Mining & Smelting Co. of Canada, Ltd. continues its move into US markets. The new firm, headed by Robert Hendricks, president, will erect a one million dollar fertilizer storage plant at Tentwood. Hendricks is also vice president in charge of sales for the Canadian producer.

The US concern, with head offices in Spokane, was formed primarily to expedite delivery of Cominco fertilizers to the western and midwestern areas of the US. Balfour, Guthrie & Co., Ltd. will continue to handle all US sales of the Canadian fertilizer.

Included in the Tentwood project will be a 1000 x 240 foot warehouse for storage of 50,000 tons of bagged fertilizer, 4,000 feet of trackage, facilities for storing liquid fertilizer and equipment for conversion of anhydrous ammonia to aqua ammonia. Located on the Spokane International RR, the site includes enough land to permit future construction of two more storage units and an enlarged liquid fertilizer tank farm.

Incorporation papers showed capitalization of two million dollars and three Spokane residents —Alan P. O'Kelly, Grant J. Silvernale and Dorothy C. Underwood, as incorporators.

### SBA Offers New Product Information

Are you looking for information on introduction of a new product? You will find some real assistance in "New Product Introduction for Small Business Owners," Small Business Management Series No. 17 from the S. B. Administration.

For a copy, send 30 cents to the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. noting title and series number.

HOW UNION BAG BUILDS MORE  
BUSINESS FOR THE FERTILIZER INDUSTRY

**"I insist on fertilizer  
in Multiwall bags," says  
world champion  
corn grower**

**Willard C. Kirk, farmer,  
Jeffersonville, Ohio**

"Science rules on my farm," says Mr. Kirk, winner of many "ten ears" awards and trophies. "I rotate strictly so as not to rob my soil—soybeans and oats, one year each; pasture, two years; then corn, one year. I use lots of fertilizer, and prefer it packed in 80-lb. Multiwalls. I find Multiwalls easy to handle and store, and to open and empty completely. Also, fertilizer does not sift out of these paper bags."

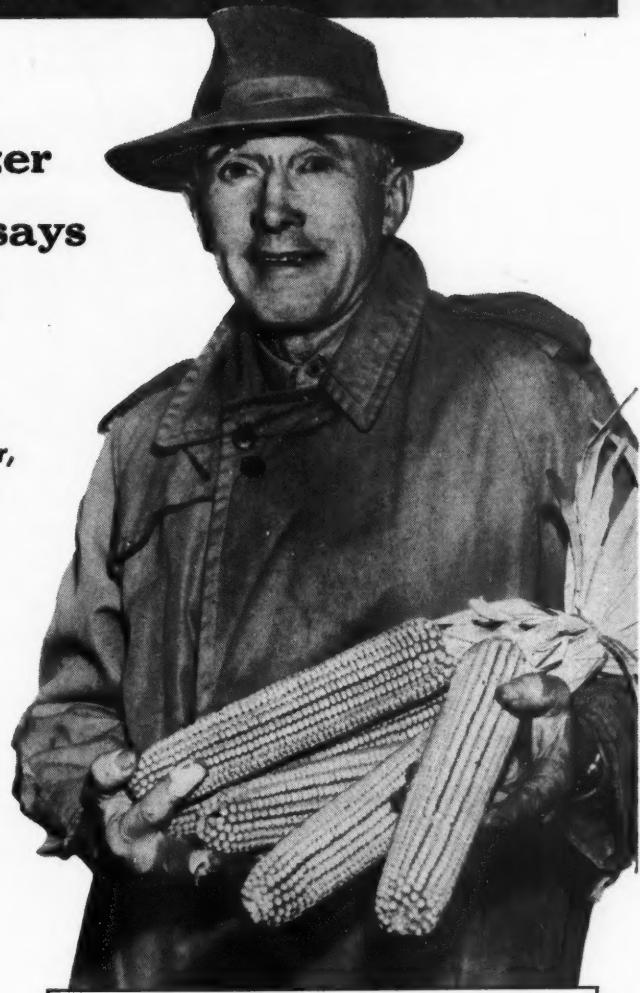
**Union Bag fosters science on the farm**

Many farmers, like Mr. Kirk, get tips on fertilizer use through the information program of Union Bag & Paper Corporation, which provides basic data for newspapers, magazines, and radio and television stations.

Union's country-wide educational program is designed to increase fertilizer consumption. More and more of the output of this growing industry is being marketed in Union Multiwall bags.

As farmer and dealer preference for fertilizer-in-multiwalls continues to grow, so does manufacturers' preference for Union Multiwalls.

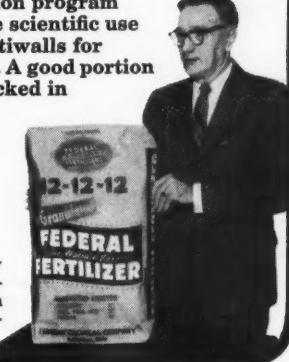
Are you completely posted on all the recent advances in multiwall packaging of fertilizer? We will be glad to show you some of the new Union sacks the industry is now using so successfully.



"Union Bag's information program will help farmers in the scientific use of fertilizer. Union Multiwalls for fertilizer help them too. A good portion of our production is packed in Union Multiwalls."

Mr. John R. Sargent,  
Vice President  
in Charge of Sales,  
Federal Chemical Company,  
Louisville, Ky.

Federal Chemical Company supplies America's "bread-basket" with fertilizer, much of it packed in Union Multiwall bags.



**UNION Multiwall Bags**



UNION BAG & PAPER CORPORATION • WOOLWORTH BUILDING, NEW YORK 7, N. Y.



All crops need nitrogen.  
When they do ...

**SELL  
HORSE & LION  
NITROGEN  
FERTILIZERS**

When your customers can measure the growth and can see a superior result from using a "HORSE & LION" nitrogen fertilizer ... you can soon measure the increase in your sale of these great products. Proven the world over, "HORSE & LION" nitrogens are practical, effective. There are five types, for various requirements:

"HORSE & LION" Calcium Nitrate: 15½% pure nitrogen, combined with 28% available lime. Granulated.

"HORSE & LION" Ammonium Nitrate Limestone: 20½% pure nitrogen (10¼% nitric and 10¼% ammonic nitrogen) and approximately 32 to 33% calcium carbonate. Granulated.

"HORSE & LION" Ammonium Sulphate Nitrate: 26% pure nitrogen (11% nitric and 15% ammonic nitrogen). Granulated.

"HORSE & LION" UREA 44": 44% pure nitrogen. Coated pellets for dry use.

"HORSE & LION" UREA 46": 46% pure nitrogen. Pellets without coating for liquid application or dry use where fast dissolving desired.



*For complete information and prices, contact your nearest "HORSE & LION" fertilizer headquarters.*

**ATKINS, KROLL & Co.**

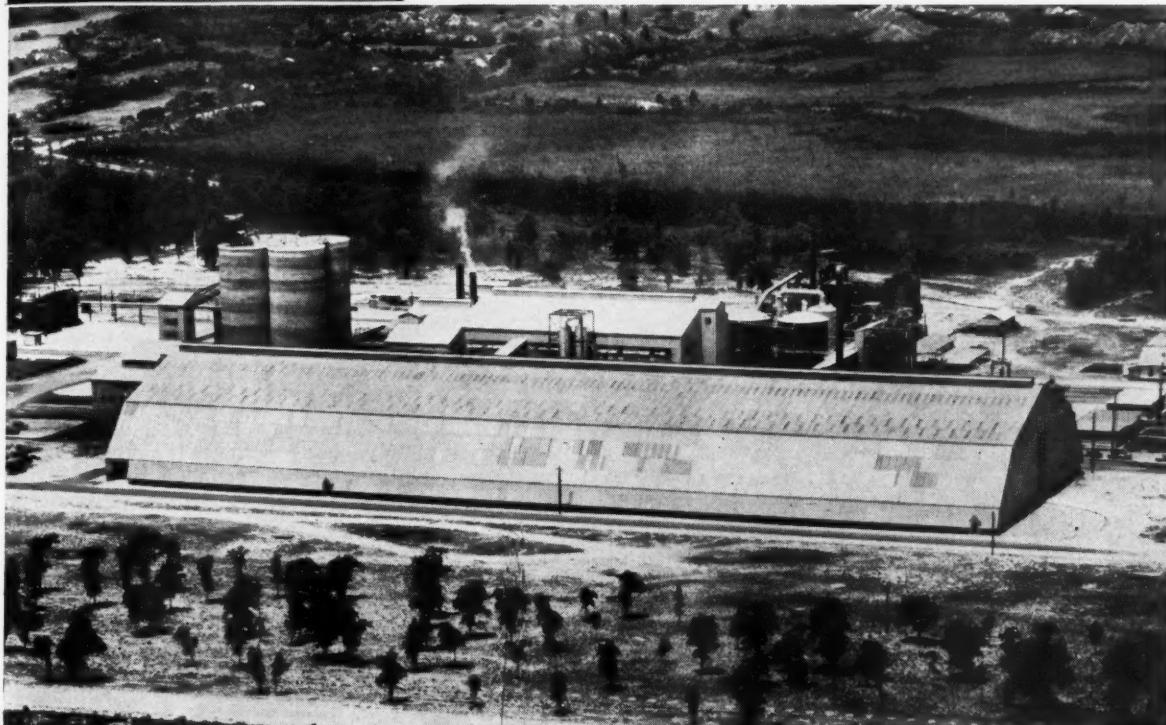
*Established 1906*

*Distributors, U. S. A.*

500 Fifth Avenue, New York 36, N. Y.  
417 Montgomery Street, San Francisco 4, California  
417 South Hill Street, Los Angeles 13, California  
421 S. W. Sixth Avenue, Portland 4, Oregon



## 85,000-ton natural curing process boosts (P<sub>2</sub>O<sub>5</sub>) availability



### Result:

Finer texture, more complete ammoniation with International's

### TRIPLE Superphosphate

It takes *time* and *big* capacity to produce the finest Triple Superphosphate. And International's Bonnie Plant was designed with both in mind. No compromise in quality — every batch is *natural* cured to give you a guaranteed minimum of 46% A.P.A. No compromise in supply and delivery — the mammoth natural curing unit, as big as *two* full-sized football fields, has a 85,000-ton capacity to meet peak demands.

Result: you can depend on International for *natural-cured* Triple Super that gives you finer, more uniform particles . . . and more complete ammoniation. It's one more way to help you reduce costs of your finished product. If you're not already using this finer Triple Super, write or wire for samples and quotations.

**INTERNATIONAL MINERALS & CHEMICAL CORPORATION**

Phosphate Chemicals Division • General Offices: 20 North Wacker Drive, Chicago 6

## Business & Management

### Minn. Chemgro Plant Nears Completion

The new Chemgro plant in Fergus Falls, Minn., is reported nearing completion. Major units were in place, in late January according to G. R. Lancaster, plant manager, with work remaining including placing of motors and drives, wiring and piping.

### New Addresses

**Allied Chemical & Dye Corp.** San Francisco sales offices of operating divisions have been consolidated at the Russ Bldg., 235 Montgomery St., San Francisco 4, Calif. Phone: TUKon 2-6840. Eight units are involved including the Nitrogen and General Chem. divisions.

**American Potash & Chem. Corp.** A new district sales office has been set up in the Russ Bldg., San Francisco, Calif. to handle sales in northern and central Calif., Nev., Utah and Colo. Rod Taft, former supervisor of potash

sales, is the district sales office.

A new Portland, Ore. district sales office, headed by Paul F. Staub, will cover Ore., Wash., Idaho, Mont., Wyom. and British Columbia. Staub previously was district manager for L. H. Butcher Co. and has served with General Chemical Div.

**Shell Chemical Corp., Agr. Chem. Sales Div.** Office of the recently consolidated Delta-Houston district has been moved from Jackson, Miss. to New Orleans.

### Hercules Proposes Emp. Savings Plan

Stockholders of Hercules Powder Co. have been asked to approve an employee savings plan under which the company would contribute 25 cents for each dollar set aside by employees.

This step, plus a proposed three-for-one split of common stock and a stock option plan for certain key employees were outlined in a recent proxy statement.

### Miss. River Plant in Production



The new ammonium nitrate plant of Mississippi River Fuel Corp. at Selma, Mo., goes into production with an inaugural run on its battery of Bemis fertilizer packers. Shown are John L. Sanders, sales manager; Cecil H. Lashlee, plant manager, and Bemis representatives O. V. Whitehead and A. J. Grunzinger. About 140,000 tons of products are to be marketed annually.

### Expanded Facilities For Diamond Alkali

DD facilities at the Houston Greens Bayou plant and 2,4-D plants at Newark, N. J. and Des Moines, Iowa are being enlarged by Diamond Alkali Co. in an over-all expansion program.

Other moves included expanded perchlorethylene production and new equipment and facilities for ethylene dichloride output at the Houston Deer Park plant, installation of a new methane purification unit at Belle, W. Va. and added facilities for Chlorowax at Painesville, Ohio.

Most of the steps according to Loren P. Scoville, general manager of the chlorinated products div. are aimed at increasing yields and adding production control refinements and product quality improvements.

### Fert. Mfrs. Tour N. Div. Facilities

One day tours of facilities at Hopewell, South Point and Omaha have given 240 fertilizer manufacturers an opportunity to see Nitrogen Division, AC&D, in action. Division sales reps extended the invitations and conducted the tours designed to give a clearer picture of both personnel and methods.

### Incorporations

**Arabian American Fert. Corp.** (fertilizers and chemicals). 14 Wall St., New York City 5. Charter lists capital stock of 300 shares no par value. Directors: Harold W. Conroy, Ezra P. Prentice, Jr., and Edward W. Franklin.

**Needham Associates, Inc.** (fertilizers, chemicals). 1 E. 35th St., New York City. Charter lists capital stock of \$20,000. Directors: Basil A. Needham, Marian Jones and Eugene M. Zack.



*Best of the crop  
Since 1917*

PHOTO COURTESY WESTERN GROWERS ASSN.

## TRONA® POTASH for Agriculture

In 1917 state fairs were awarding prizes for outstanding farm products just as they are today. Then as now, growers depended on Trona® MURIATE OF POTASH for high quality crops. For it was in 1917 that Trona, first to produce domestic Potash when World War I pinched-off foreign sources, shipped the first train-load to the east coast. For the next twenty years Trona was the *only* domestic source of Potash and today, in spite of AMERICAN POTASH AND CHEMICAL CORPORATION'S broad diversification program, is still one of the primary basic suppliers of high grade Muriate and Sulphate of Potash for Agriculture.

MURIATE OF POTASH, agricultural grades 95-98% KCl, (60% K<sub>2</sub>O minimum), regular and granular.  
SULPHATE OF POTASH, agricultural grade, 95-98% K<sub>2</sub>SO<sub>4</sub> (51% K<sub>2</sub>O minimum).



**TRONA**

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BORAX	BROMINE
POTASH	CHLORATES
SODA ASH	PERCHLORATES
SALT CAKE	MANGANESE
LITHIUM	DIOXIDE

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**Plants** • Trona and Los Angeles, California; Henderson, Nevada  
San Antonio, Texas (American Lithium Chemicals, Inc.)

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Supplies Your NITROGEN NEEDS**

**HERE'S THE LION LINE-UP  
OF QUALITY NITROGEN  
FERTILIZER MATERIALS**

Lion Anhydrous Ammonia—82.2% nitrogen. Quality guaranteed.

Lion Aqua Ammonia—Ammonia content about 30%—other grades to suit your requirements.

Lion Ammonium Nitrate Fertilizer—Improved spherical pellets. Guaranteed 33.5% nitrogen.

Lion Nitrogen Fertilizer Solutions—Various types to suit your particular manufacturing needs.

Lion Sulphate of Ammonia—White, uniform, free flowing crystals. Guaranteed 21% nitrogen.

Now that the new fertilizer manufacturing season is in full swing, make sure you realize all the profits your plant can produce. *Where you buy* your raw materials can be vital and now, more than ever before, it pays to buy *your nitrogen needs* from Lion—a leader!

Lion nitrogen products are manufactured under rigid controls to meet exacting specifications—ending the costly production delays that result when ingredients vary in quality from day to day. With Lion products, you produce with maximum efficiency and profit—and you maintain the quality standards your customers demand.

Lion also provides an expert technical staff to assist you in solving difficult formulation and processing problems. And, throughout the year, Lion's sales building advertising tells farmers the plant food story—for your benefit. Lion's leadership in customer service stands out, offering you outstanding opportunities for increased profits—and your best season yet!

**DISTRICT SALES OFFICES:** LION OIL BUILDING, El Dorado, Ark. • INSURANCE EXCHANGE BUILDING, Des Moines, Ia.  
NATIONAL BANK OF COMMERCE BUILDING, New Orleans, La. • 1401 BUILDING, Atlanta, Ga.

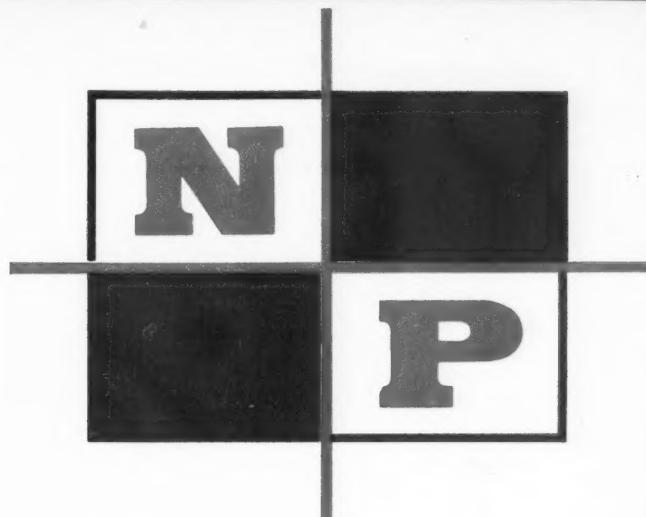
**LION OIL**

A DIVISION OF MONSANTO CHEMICAL COMPANY



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**THE NEWEST SIGN  
FOR YOUR POTASH**

The qualities you look for in potash — high K<sub>2</sub>O content, a free flowing material, a variety of screen sizes — will be found in the new NATIONAL POTASH product to be on the market next year.

This assurance is based on the skills and reputations inherited by NATIONAL POTASH from its parent companies — Freeport Sulphur Company and Pittsburgh Consolidation Coal Company. These leaders in their respective fields have formed an organization dedicated to quality and service to satisfy the fertilizer manufacturer's potash needs.

Write for complete information on the  
NATIONAL POTASH program.



# Business & Management

## Labor Dept. Screens Critical Occupations

A number of critical occupations of interest to the industry are on a new screening list issued by the Department of Labor. The roster was prepared for use by the armed forces in building up and maintaining a ready reserve available for immediate active service during a national emergency. Eighty-one occupations are termed critical to defense production and the maintenance of minimum civilian requirements during a mobilization period.

On the list are: Agronomists, bacteriologists (including microbiologists), chemists, engineers (professional, including chemical) entomologists, geologists, parasitologists, physiologists (plant or animal), plant pathologists and veterinarians.

## Big Gain for Italian Chemical Industry

Business and Defense Services Administration reports that Italian chemical output in 1954 rose 24 per cent above the previous year, the largest percentage gain of any Italian industry. Increases were shown in output of synthetic ammonia, superphosphate, nitrogen fertilizers and copper sulfate.

During the year, chemical exports increased \$22 million over 1953, a gain attributed mainly to higher sales of fertilizers, pharmaceuticals and plastics materials.

## Egyptian N Plant

Nitrogen fertilizers are expected to begin flowing from a huge Egyptian factory sometime during 1959. The plant, a \$63,360,000 operation, will be constructed by a German-French group—Uhde, Badische-Anilin and Schneider.

A spokesman for the Egyptian

National Production Council states that maximum production will be 1,280 tons per day with an annual output of 415,000 tons. The facilities will be located near the site of the Aswan Dam.

A bid of \$35,357,760 was submitted by the combine including all equipment, machinery and construction costs with the remainder covering housing, transportation and insurance.

## A-W Opens Office at Montgomery, Ala.

During February, Ashcraft-Wilkinson Co. opened a new office at 201 Weil Bldg., Montgomery, Ala., to serve Alabama and northwest Florida. Thomas W. Richardson, a nitrogen sales representative for Lion Oil Co. for several years, was named manager.

A native of Knoxville, Tenn., Richardson studied at the University of Tennessee, graduated in agriculture from Alabama Polytechnical Institute, managed a livestock farm for several years and taught veterans vocational agriculture for five and a half years.

## New Fert. Firm To Build Plant

Green Soil Conditioner & Fertilizer Co. has been incorporated at Spokane, Wash. with capitalization of \$100,000. According to L. I. Lorang, an incorporator, the firm will erect a \$45,000 processing plant near Loon Lake, Wash. for production of a natural fertilizer and soil conditioner. Offices are to be opened at E1818 Sprague in Spokane.

## Pennsalt Files for Debenture Offering

Pennsylvania Salt Mfg. Co. has filed a registration statement with the Securities and Exchange Commission covering the proposed offering of a new issue of \$15 million sinking fund debentures, due April 1, 1981.

Net proceeds from their sale will be used in connection with an expansion, development and improvement program under which the firm contemplates a \$55 million expenditure over the next five years.

Already under construction as part of the growth program are a multi-million dollar unit at Calvert City, Ky. for production of aerosol propellants and refrigerants; facilities at Wyandotte, Mich., for production of high-test calcium hypochlorite; expansion of anhydrous ammonia production at Portland, Ore.; and added chlorine production facilities at Tacoma, Wash.

## Grange Supply Buys Fertilizer Business

Sprague Grange Supply of Sprague, Wash. has purchased the fertilizer business of M. L. Jones and will operate it through the Grange Supply organization.

Included in the deal are trucks, applicators and other equipment and supply owned by Jones. Two employees, Jack Ramsy and Leonard Frerichs, have been retained by Grange Supply.

## Canada Authorizes Mg. Project for PCO

A ten year agreement has been secured from the Government of Saskatchewan by the Potash Co. of America, authorizing it to develop and produce magnesium from 100,000 acres in the Quill Lake area.



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# TRIANGLE BRAND COPPER SULPHATE

## IN YOUR FUNGICIDE AND FERTILIZER FORMULATIONS

Since 1885, successful growers have preferred Triangle Brand Copper Sulphate in fungicides. It has consistently proved itself more effective and superior to organic materials; in sprays, where Bordeaux Mixture is the most reliable, or in dusts, if preferred.

In mixtures and emulsions, it is compatible with virtually every other pesticidal material. In fertilizers, it is important for enrichment of the soil and its use guarantees larger, healthier and more profitable crops. Forms of Triangle Brand Copper Sulphate available are:

**INSTANT** (powder) for quick and efficient mixing of Bordeaux sprays.

**DIAMOND** (snow) small or large crystals, all containing 25.2% metallic copper.

**BASIC** Copper Sulphate in powder form, containing 53% metallic copper.

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## Report on the new **MICHIGAN 12B**



*Power-shifting makes this new tractor shovel*

### **faster and more maneuverable in boxcars**

If you've ever tried to shift gears and turn a corner at the same time, you'll understand why the new Michigan 12B is faster and more maneuverable in tight quarters. You don't have to stop to shift the 12B. Without taking your left hand from the wheel, you simply push the single power-shift lever to High, Low or Reverse—instant shifting, just like a new car.

**Speeds cycles.** Clark's exclusive power-shift transmission and torque converter completely eliminate the clutch pedal and engine clutch; no gear clash, no hesitation.

Power-shifting saves seconds or minutes on every cycle, in addition to eliminating down-time due to clutch trouble.

**Dust protection.** Oil bath air cleaner, filters and sealed assemblies protect

the 12B against dust and dirt in every conceivable way. Take a first-hand look at this modern Tractor Shovel—clip the coupon to your letterhead and we'll arrange a demonstration in your own plant.

Available on Clark's no-down-payment Lease Plan; write for Data Sheet 111.

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**OUR IMPROVED**



*Muriate of Potash?*

- HIGH ANALYSIS
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**DUVAL SULPHUR and POTASH CO.**

Modern Plant and Refinery at Carlsbad, New Mexico

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# Business & Management

## "Green Pastures" Film from GC Div.

"Green Pastures," a full-color, sound-slide film giving the complete story of grassland farming has been released by General Chemical Div., Allied Chem. & Dye Corp. The 45 minute film is available for showing to farm audiences by county agents, extension, ag college faculty, farm organizations and other groups active in agricultural educational work.

It provides up to date information on profitable practices in pasture management with particular emphasis on fertilization, pest control, harvesting and silage preservation.

The film is available on a permanent or loan basis depending upon an organization's requirements. County agents and ag groups in your area can write to the firm's Agricultural Chemicals Department, 40 Rector St., New York City 6.

## Advisers Sought for 1956-57 JA Program

During the next few months, advisors will be sought for the 1956-57 Junior Achievement program, reports Junior Achievement, Inc.

In a recent survey among 89 advisers in the Minneapolis JA business center, 88 responded "yes" to the question "Do you feel that as an Adviser you have profited from the experience? The one who would not admit profit declared that he found the volunteer work "very interesting."

Manpower is urgently needed to expand this effort to spread understanding of business among young people, according to Larry C. Hart, JA president.

Information on how to open a center is available from national

Junior Achievement headquarters at 345 Madison Ave., New York City.

## Prizes for Best Safety Pictures

Prizes of \$500 will be awarded in a nation-wide "Picture of Safety Contest," beginning April 1 and ending June 30, designed to "uncover good ideas, which are already in practice, which have improved safety in fertilizer plants."

Sponsored by the Fertilizer Section of the National Safety Council, the contest is open to any employee of the fertilizer industry.

Participants are asked to first take a picture of any (1) new device, (2) improved equipment, (3) tested operation or (4) other better way of doing a job which has improved safety in their plant. Second, entrants are asked to write a short statement covering (1) the original unsafe situation, (2) what they did to correct it and (3) results obtained.

Entries are to be mailed to J. C. Kato, Fertilizer Section, National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill. No entry blank is required.

First prize winner will receive \$50; second prize, \$30; and third prize, \$20. In addition, forty honorable mention prizes of \$10 each will be awarded.

## Warehouse Destroyed

Fire is reported to have destroyed the partially insured warehouse of Apco Fert. Co., Halls, Tenn.

## Predict More US Trade With Chile

Expansion of trade with the US and greater internal stability in Chile seems very likely, the National Trade Council predicted in releasing an analysis of the Chilean economic outlook.

The council added that the improvement is forecasted on the assumption that proposed copper and nitrate expansion programs and the government's anti-inflation plans are carried through, and that these measures are implemented by additional strong steps. If amendment of the nitrate law is made as planned, this may open the way for expansion and additional investment in the nitrate industry of up to \$29 million.

During the year ended June 30, 1955, exports of sodium nitrate from Chile totaled 1,362,745 metric tons, according to the Chilean Nitrate and Iodine Sales Corp. The US accounted for 42 per cent of this total.

## New FloLizer Unit At Kingston, Ohio

Liquid fertilizers are now available in Ohio from the new FloLizer, Inc. plant at Kingston, scheduled for completion last month. Owned by Norman Dean Godden and Don Humphrey, the \$50,000 facilities will produce 200 tons per day of complete fertilizers and liquid nitrogen solutions.

An additional \$50,000 is to be used in setting up sub-plants and dealers in Ashville, Chillicothe, Circleville, Frankfort, Lancaster, Logan and Williamsport. The plant employs about 10 persons and includes a block structure and seven tanks ranging in capacity from 22,000 to 5,000 gallon capacity.



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MELTS  
DISSOLVES

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## HIGH GAMMA BHC Technical

PENCO High Gamma BHC Technical—averaging 46% gamma isomer—from Penn Salt's Calvert City, Kentucky, plant, has these advantages!

- More versatile and economical to process—grinds, melts, dissolves.
- More highly concentrated dust bases, wettable powders and liquids can be produced.
- Much less material to store, handle and process.
- Higher quality cotton dust can be formulated for application by air or ground equipment.

PENCO BHC Technical—averaging 14% isomer—available in flake form—ideal for easy grinding—extending into dust bases—finished dusts.

For superior, high-quality products select PENCO Agricultural Chemicals.

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"Technical BHC  
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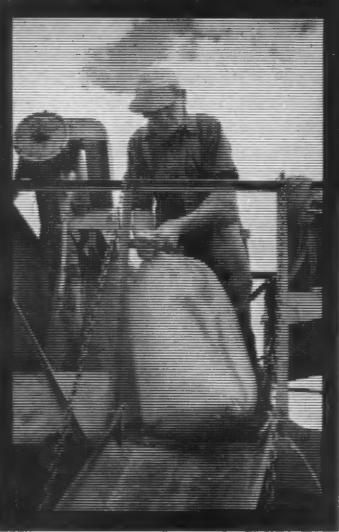
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# TRIPLE SUPER- PHOSPHATE

1. RUN-OF-PILE FOR MAXIMUM AMMONIATION
2. GRANULAR FOR DIRECT APPLICATION
3. PROMPT SERVICE TO MEET EVERY REQUIREMENT

Superior phosphate fertilizers have been produced for nearly 30 years. This unequalled experience is your assurance of quality and dependability in Triple Superphosphate. To plan your shipments for maximum satisfaction, call upon your Bradley & Baker representative today.

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# Business & Management

## Annual Reports—1955

COMPANY	1955 Sales (million)	Net Income (million)	Net Income per Common Share	Change	Sales Earnings per cent per cent
Stauffer Chemical Co.	\$143.6	\$12.3	\$4.04	+22	+34
Olin Mathieson	560.5	44.6	3.51	+11	+17
Atlas Powder	60.3	3.5	4.70	+4	+31
Commercial Solvents	56.6	3.5	1.31		
Pittsburgh Plate Glass	582.0	61.4	6.26	+35	
DuPont	1,909.0	292.0*	9.26	+13	+248
Hercules Powder	226.7	19.0	6.90	+21	+34
Michigan Chemical	6.6	.3	.64	+12	#
Monsanto Chemical <sup>1</sup>	522.3	42.2	1.98		

\*Net income from operations \$228,894 net loss in 1954 <sup>1</sup>Includes Lion Oil sales

### Union Ice Adds to Liquid Fert. Staff

An expansion of Union Ice Co.'s liquid fertilizer division at Bakersfield, Calif. has been announced by Hal B. Harlow, manager. The branch of a Los Angeles firm, it has added three men, doubling the size of the staff handling sales of aqua ammonia.

Union Ice has been selling the liquid plant food for about a year and Harlow reports demands warranting expansion of both sales personnel and plant facilities.

### Ga. Firm Installs Solutions Tank

Georgia Belle Guano Co., Newnan, Ga., has installed a 22,000 gallon aluminum storage tank for nitrogen fertilizer solutions. Farmers can load up with their own equipment, rent tanks and applicators or have the nitrogen applied for them.

### Na-Churs Florida Plant Established

As a result of transportation difficulties in serving the lucrative Florida market from Marion, Ohio, Na-Churs Plant Food, Inc. has established a liquid fertilizer plant at Winter Garden, Fla. Na-Churs leased the former Britt

packing house from the ACL railroad, remodeled the building and added \$100,000 worth of new equipment.

Approximately six men will be required to operate the facilities, according to Ben Peterson, Na-Churs' board chairman.

### DBL Product Brochure

Diamond Black Leaf Co. has just issued an informative brochure covering its new, improved line of pesticides. Supplementary information includes a review of dealer advertising and sales promotion helps and complete price schedules.

Copies are available to garden

supply dealers, hardware retailers and others upon request to Diamond Black Leaf Co., 300 Union Commerce Bldg., Cleveland, Ohio.

### West End-Stauffer Merger Considered

A proposal for merger of the West End Chemical Co. with Stauffer Chemical Co. is receiving "active consideration" by the boards of directors.

West End would probably continue to operate under the present management as an autonomous Stauffer division.

### Fert. Demonstration By Brown Co., N. Div.

A Blackville, S. C. demonstration by the Brown Fertilizer Co. and Nitrogen Division, AC&D, showed some 50 local farmers the value of liquid fertilizer application. D. Stanley Brown, operator of the Blackville concern, has purchased storage tanks and equipment, plans to rent applicators at about 25 cents per acre plus cost of the fertilizer.

He will also treat fields on a \$1 per acre basis plus cost of the plant food solution.

### CSC Expands Poster Program



Commercial Solvents Corp. is expanding its outdoor poster program for "2-Step Action" ammonium nitrate fertilizer to hasten build-up of package identification in selected farming areas, reports Outdoor Advertising.

# FARMERS EVERYWHERE ARE READING ABOUT AND ASKING FOR . . .

**JOHN DEERE  
VITREA  
45% NITROGEN**

- UREA NITROGEN
- DUST FREE . . . NON-CAKING
- QUICK ACTING, YET LONG LASTING
- IDEAL FOR PLOW DOWN, TOP DRESSING OR SIDE DRESSING
- ECONOMICAL

**Grand River Chemical Division of  
DEERE & COMPANY  
TULSA, OKLAHOMA**

Millions of farmers are reading about John Deere Vitrea through a consistent, well planned advertising program . . . designed to help you make more sales . . . to help farmers make more profit.

- Ideal for direct application . . . liquid or dry mixing
- In 80 pound bags or in bulk, coated or uncoated
- Fast dependable service

AVOID THE RUSH . . .

ORDER VITREA OR ANHYDROUS AMMONIA NOW!



**Grand River Chemical Division of  
DEERE & COMPANY**

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TULSA, OKLAHOMA

## Open House at New MFA Bulk Mix Plant

Open house was held in February at the new Jeffriesburg, Mo., bulk plant of Missouri Farmers Assn. The mixing plant serves farmers within a 30 mile radius.

Oliver Barnard, a former vo-ag teacher, is manager.

## Chatelier in Fla. News

Hydroponics was in the news in Florida recently, with articles on Dr. Paul Chatelier and Chatelier's water soluble plant food, and the Hydroponic Gardens of Florida Christian College, Temple Terrace, Fla., appearing in local newspapers. Sales of Chatelier's plant food in 1955 are reported up 50 per cent over 1954.

## Belgian Firm Gets China Fert. Contract

A giant fertilizer contract has been awarded by China National Import & Export Corp. to a Belgian chemical firm. Over 400,000 tons of nitrogen plant foods will be purchased from Belgian Cobelaz Co. during a one year period beginning July of this year.

## S. B. Penick Adds French Company

S. B. Penick & Co. (S.A.R.L.) has been formed by S. B. Penick & Co., New York. Managing director is Henry Beaudichon, and headquarters are in Chatou, France.

## Vitro to Develop Indian Fert. Unit

The Indian government has commissioned Vitro Corp. to map out production and process methods for a proposed combination fertilizer and heavy water plant. The firm reports that the plant would be part of an extensive program of development being carried out in the Dhakra-Nangal area of north India.

FORMULATORS—DISTRIBUTORS—REPACKAGERS

*It is Here!*

A PERFORMANCE TESTED YET ECONOMICAL IRON  
COMPOUND CAPABLE OF MANY DIVERSE APPLICATIONS

# NU-IRON

(30% as Metallic)

### Compare These Advantages and Incentives:

- ✓ Inexpensive
- ✓ Profitable
- ✓ Iron content 30% as metallic
- ✓ Effective correction of iron chlorosis at low dosage rates
- ✓ Easily applied as spray or dust to foliage
- ✓ Compatable in mixtures or combination applications with common spray dust chemicals
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- ✓ Neutral in character, readily suspendable, water insoluble powder

Particularly effective for correcting chlorosis and stimulating plant growth on the following

**EVERGREENS—ORNAMENTALS**

**FRUITS—GRASSES—VEGETABLES**

**FLOWERING PLANTS**

AVAILABLE IN 50 POUND BAGS ONLY

For prices, samples and data, make request on your firm's letterhead.

TENNESSEE



CORPORATION

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# PEOPLE

**American Potash & Chemical Corp.** Dr. Hal B. H. Cooper joins the firm as director of development engineering. With headquarters at Los Angeles, he will be in charge of special engineering phases of new projects and developments at AP & C plants and will act as engineering adviser on pilot plant research operations.



Nelson

Bernard F. Nelson has been named California area representative for the Aerosol and Refrigeration Div. He goes to the firm from Shepherd Machinery Co.

**Atlas Powder Co.** Dr. Sydney Steele, former director of the planning staff, has been promoted to industrial assistant to E. J. Goett, vice president in charge of the Chemical Div.

Appointments of Theodore P. Malinowski as development manager in the Chemicals Div. Product Development Dept. and E. John Caruso as assistant manager of the Chicago sales office also were announced.

**American Smelting & Refining Co.** Harold B. Jones joins the research staff as research coordinator, insecticides. Although attached to the staff of Asarco's Central Research Labs at Plainfield, N. J., Jones will travel widely through the southern states and make his headquarters in Memphis, Tenn.

**California Spray-Chemical Corp.** Dr. George S. Hensill, assistant manager of research and development, was honored recently at a luncheon at the Rich-

mond, Calif., country club for his 20 years service with Calspray.

**Climax Molybdenum Co.** Appointment of Benjamin H.

Danziger as manager, advertising and promotion, is announced. Since joining the firm in 1952 he has been assistant budget officer and manager of catalyst and pigment development.

**Texas Gulf Producing Co.** Board Chairman Gordon W. Reed has been elected to the Climax Molybdenum board of directors.

**Diamond Alkali Co.** Election of John A. Wilson as assistant secretary is announced.

**SODA PRODUCTS DIV.** A. T. Bennett, superintendent of the former Alkali Div. since last August, takes over a similar post in this recently formed division and R. A. Springer, manager of research, Alkali Div., becomes manager of research, development and technical service.

**TRAFFIC DEPT.** Gregory B. Perry named general traffic manager; Edward L. Santner continues as assistant general traffic manager in charge of Cleveland traffic and takes additional responsibility for tank car operation and maintenance among other transportation matters; Homer E. Schuchman becomes assistant general traffic manager with responsibility for rates; Frederick T. Clark retires from Diamond following 26 years' service in traffic work with the firm.

**Diamond Black Leaf Co.** James R. Arthur and William J. Byrne, Jr. have been named special staff assistant and administrative assistant, respectively.

**Dow Chemical Co.** Donald K. Ballman, Dow general sales manager, was presented the 1956 honor award of the Commercial Chemical Development Association at the group's annual banquet.

**Eastman Chemical Products, Inc.** James C. White has resigned as president and been elected chairman of the board. William S. Vaughn, first vice president, succeeds him as president.

White continues as president and Vaughn as first vice president of Tennessee Eastman Co. and Texas Eastman Co., divisions of Eastman Kodak Co.

**Escambia Bay Chemical Corp.** Election of Robert U. Haslinger as vice president and general manager of the firm is announced by Kenneth G. Donald, president.



Haslinger

Haslinger was with Stauffer Chemical Co. as assistant to the president and director of sales—industrial chemicals, and previously held posts in research, product development and sales with Monsanto Chemical Co.

**Food Machinery and Chemical Corp.**, Chemical Divs. New labor relations manager is John Pauly, staff assistant for labor relations in the FMC Chemical Divisions New York office for the past two years.

**CENTRAL RESEARCH LAB.** Dr. W. L. Davidson becomes assistant director; Hugo Stange, manager of the Organic Chemistry Dept. at the lab and Dr. S. C. Carniglia, manager of Inorganic and Physical Chemistry Dept.

**Hazlehurst Oil Mill & Fertilizer Co.** William Aston Cov-



## There's a solution at Sohio that fits your needs exactly

**S**OHIO's complete line of nitrogen solutions opens new opportunities in formulation for fertilizer manufacturers . . . no other nitrogen producer offers a more complete line.

The broad selection of physical and chemical characteristics, total nitrogen content, and percentage of free ammonia in Sohio's solutions line means greater freedom in formulation . . . more flexibility in manufacture . . . and a better chance to cut your costs.

Sohio's technical service staff will be happy to help you select the exact solution that best fits your own needs . . . the one that produces best results at lowest cost.

*We're serious about service at Sohio*



SOHIO CHEMICAL COMPANY

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### SPEED DELIVERY IN 3 DAYS OR LESS

In a hurry? Call Sohio. You'll get unmatched service and fast delivery.

Sohio's new truck fleet assures super-fast delivery within trucking area . . . and the 5 rail lines that serve Lima — Nickle Plate; Baltimore and Ohio; Erie; Pennsylvania; and Detroit, Toledo and Ironton, provide excellent service to all points. Sohio's loading facilities and large storage capacity assure rapid servicing of every order.

## ... People

ington has been named manager, according to an announcement by Mississippi Cottonseed Products Co., parent firm.

### International Minerals & Chemical Corp.

The Potash Div. has appointed Roy Roughton sales representative for agricultural potash salts in the Chicago district. He will be responsible for agricultural sales of the division throughout the west north-central area of the Midwest and will headquartered at Chicago.

James R. Thoburn Bishop, 60, IMC vice president, died on January 23 at Saratoga, Calif.

**Olin Mathieson Chemical Corp.** Dr. David C. Lea is new research and development manager of the Forest Products Div.

**Pacific Coast Borax Co.** Raymond M. Burke has joined the New York Technical Service and Product Development Dept. A graduate of St. Peter's College with a B.S. in chemistry, he is now completing work for his Master's Degree in Science at Stevens Institute with major in marketing.

**E. Rauh and Sons Fertilizer Co.** S. J. Martenet, president, has been elected to the board of the Belt Railroad and Stock Yards Co.

**J. R. Simplot Co.** Fertilizer Div. Fred Grasser has been hired as assistant production superintendent. A chemical engineer, he was graduated from Washington State College in 1951 and served as production engineer with Pacific Coast Borax.



Roughton

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### Union Carbide and Carbon Corp.

Howard S. Bunn, executive vice president, has been named New York State Chairman for Chemical Progress Week, April 23-28. The Manufacturing Chemists' Assn. has announced that "A Better America Through Chemical Progress" will be the theme of this year's program.

### United States Potash Co.

Alexander "Pete" McBride joined the firm as a sales representative on March 26. McBride is an alumnus of the Wharton School of the University of Pennsylvania and has served as sales representative with Springfield Fire and Marine Insurance Co. and Dragon Cement Co.



McBride

### Velsicol Chemical Corp.

Dr. Robert O. Sauer, formerly engaged in development engineering work for General Electric, has been appointed vice president in charge of research and development at Velsicol. At General Electric, Dr. Sauer has been manager, engineering, and manager of advance and development engineering with the Silicone Products Dept.

M. L. "Andy" Anderson, Velsicol sales representative for the past four years, has been appointed Southwest district manager for Velsicol's Agricultural Chemical Div. He will headquartered at Austin, Tex.



Sauer



Anderson

## Calendar

**April 10-12.** 21st annual conf. of Council for Agricultural and Chemical Research, Congress Hotel, Chicago.

**April 11-12.** Insect and Rodent Control Conf. for Sanitarians, Purdue University, Lafayette, Ind.

**April 16-17.** Calif. Fertilizer Conference, sponsored by CFA's Soil Improvement Committee, Citrus Experiment Sta. University of California, Riverside.

**May 15.** Western Agric'l. Chemicals Association Spring Meeting, Hotel Clark, Los Angeles, Cal.

**May 16-18.** Synthetic Organic Chemical Manufacturers Assn. annual outing, Skytop, Pa.

**May 20-22.** Chemical Specialties Mfrs. Assn. mid-year meeting, Drake Hotel, Chicago, Ill.

**June 5-6.** American Phytopathological Society, North Central Div., summer meeting, Kansas State College, Manhattan.

**June 10-11.** National Plant Food Institute Convention. The Greenbrier, White Sulphur Springs, Va.

**June 28-30.** Assn. of Southern Feed & Fertilizer Control Officials Convention, Hotel Roanoke, Roanoke, Va.

**June 28-30.** Pacific NW Plant Food Assn. Fertilizer Conference, Chinook Hotel, Yakima, Wash.

**July 12.** Annual S. C. Fertilizer meeting and tour, Edisto Exp. Sta., Blackville, S. C.

**July 19-20.** Southwestern Fertilizer Conference and Grade Hearing, Buccaneer Hotel, Galveston, Tex.

**July 25-27.** NW Assn. of Horticulturists, Entomologists & Plant Pathologists Conf., Northwest Wash. Experiment Sta., Mt. Vernon, Wash.

**Aug. 1.** Annual Kentucky Fertilizer Conference, Guignol Theatre, Univ. of Kentucky, Lexington, Ky.

**Aug. 17-25.** Tenth International Congress of Entomology, McGill University & Univ. of Montreal, Montreal, Canada.

**Aug. 30.** S. C. Plant Food Educational Society Fall Convention, Clemson House, Clemson, S. C.

# GOVERNMENT

## ICA Authorizations

**Cambodia.** \$175,000—phosphatic fertilizers (PA No. 42-235-99-A6-6003); \$50,000—nitrogenous fertilizers (PA No. 42-230-99-A6-6002). Source: world wide. Terminal delivery date: Aug. 31, 1956. Procurement through Emerg. Proc. Service, GSA.

**Indonesia.** \$1,971,000—diel-drin, 50 per cent wettable powder (PIO/C No. 97-51-085-5-60083). Source: USA & poss. Terminal delivery date: Dec. 31, 1956. (Delivery in 3 shipments to arrive Indonesia June 30, Sept. 30 and Dec. 31, 1956.) Procurement through EPS, GSA.

**The Republic of Korea.** \$610,000—agricultural pesticides (PA No. 89-236-00-A6-6011). Contract period: Feb. 14 to July 31. Source: USA & poss. Terminal delivery date: Sept. 30, 1956.

\$543,000—agricultural pesticides (PA No. 89-236-00-C2-6008). Source: USA & poss. Terminal delivery date: June 30, 1956. Procurement through EPS, GSA.

\$250,000—phosphate rock fertilizer (PA No. 89-235-99-A6-6012). Source: world wide. Terminal delivery date: Oct. 31, 1956.

**Taiwan (Formosa).** \$2,792,000—urea plant equipment (PIO/C No. 84-23-046-9-60116) Chemicals & chemical preparations—\$140,000; Hand tools for machine shop—\$66,000; Electrical power distribution equipment \$161,000; Processing equipment—\$1,692,000; laboratory equipment—\$10,000; misc. vehicles—\$5,000; transportation, accessorial, handling and misc. charges—\$50,000; ocean transportation \$668,000. Procurement through Taiwan Fertilizer Co. as represented by Hydrocarbon Research, Inc., New York.

\$500,000—agricultural pesticides (PA 84-236-00-A6-6001).

Source: USA & poss. except for Sorpol 200 from Japan; Diazinon Technical and special emulsifier from Switzerland; Folitol E-605 from W. Germany. Contract period: Feb. 14—May 31, 1956. Terminal delivery date: July 31, 1956.

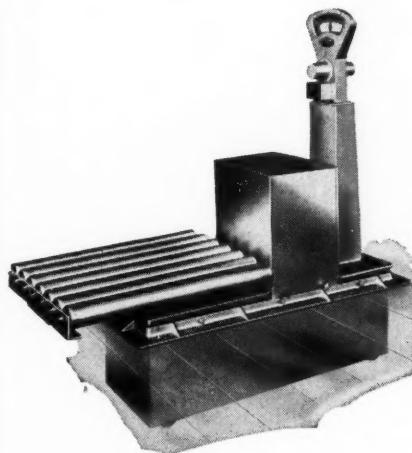
## Tobacco Acres Up

Acreage allotments for 1956 crops of burley, fire-cured, dark air-cured and Maryland tobaccos have been increased to bring acreages allotted to most farms up to the allotment for 1955 crops.

For states producing Virginia and Valencia types of peanuts in 1956, allotments have been increased 40,342 acres, raising the national total for all types to 1,650,342 acres.

## Scales for Sacking and Checkweighing

**MODEL 2229**—Designed for overhead suspension. One man can bag, weigh and checkweigh in one simple operation. Has just two controls—easy to operate. Save labor costs and eliminate over-weights with an Exact Weight Sacking Scale.



**MODEL 1302-R**—Checkweighing scale fits right into your production line. Precision checkweigher for open end or valve type bags. Fast acting, accurate, easy-to-read. Trims seconds off each weighing operation.

## Exact Weight Scales

Better quality control

Better cost control

THE EXACT WEIGHT SCALE COMPANY

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In Canada: P. O. Box 179, Station S, Toronto 18, Ont.

## Increases for FDA Enforcement Funds

The largest enforcement fund in its history, \$6,779,000 has been granted to the Food and Drug Administration for fiscal 1957.

In testimony before the appropriations committee urging the 15 per cent fund increase, Commissioner George P. Larrick said that it is intended to add about 134 new employees, and to judge

applications in less than the 180 days now allowed.

Congress has been asked to provide a fund of \$1,256,000 to FDA, more than three times the amount now available, for enforcement of the anti-merger law during fiscal 1957.

## Recommendations From USDA Advisors

USDA advisory committees meeting in Washington during

February included these recommendations in their reports:

- Improvement of present farm machinery for applying pesticides, fertilizers and herbicides.
- Development of equipment using radio waves and cathode rays to destroy insect pests and plant-disease organisms.
- Practical control measures for the spotted alfalfa aphid and other insects of forage crops and stored grains.
- Added research on control of weeds in wheat, corn and sorghum, including studies on the safe use of herbicides; expanded work on pesticide residues on or in grains and in soils.
- Studies of proposals for future farm programs, low income farming area, Great Plains farm and land management and prospective costs and returns from soil conservation practices.
- Expanded vegetables research on pesticide residues and nematode control; new work on biological control of soil-borne diseases including the effects of production practices on soil organisms.

## CCC Investment And Inventories

As of Jan. 31, 1956, the investment of the Commodity Credit Corp. in price-support amounted to \$8,891,280,000—made up of loans outstanding of \$2,971,201,000 (including \$1,270,432,000 of loans financed by lending agencies), and the cost value of inventories \$5,920,079,000. The investment, as of Jan. 31, 1955, was \$7,391,825,000 of which loans outstanding amounted to \$3,214,371,000 and inventories \$4,177,454,000.

## Borries Transfers

Frank Borries, associate editor with the Fla. Ext. Service, has transferred to the Univ. of Kentucky as specialist in press information, succeeding C. A. Lewis, who retired March 1.

## Sure Way To Cut Screening Costs!

### Ludlow-Saylor

WOVEN WIRE SCREEN

- Stress-free assembly prevents distortion of screen openings.
- Continuous testing for conformance to specifications guarantees top resistance to abrasion, set and fatigue.
- All weaving equipment and looms are designed, built and maintained within the Ludlow-Saylor plants to insure uncommon accuracy, quality and durability.
- 99 years of accumulated know-how shows up in longer service, assured dependability, lower maintenance of Ludlow-Saylor products.
- Prompt shipment of most popular screen sizes and types from stock reduces down time and cost.



### A CENTURY OF EXPERIENCE

...is at your command to help you select the right woven wire screen or cloth to do your specific job best.

**LUDLOW-SAYLOR WIRE CLOTH COMPANY**

616 South Newstead Avenue, St. Louis 10, Mo.

Sales Offices: Birmingham, 121 Euclid Avenue; Chicago, 5007 W. Division Avenue; Pittsburgh, Union Trust Building; West Coast: Star Wire Screen & Iron Works, Inc., 2050 Ken Fawcett Rd., Los Angeles, California; Ludlow-Saylor Wire Cloth Co.

## Associations & Meetings

### NPFI Aids in Radio, TV Fert. Promotion

A television "Package Show" on "Dividends from Fertilizer Use" was featured by 120 television stations throughout the US during February. Prepared by the Television Service of USDA in cooperation with the National Plant Food Institute, the program featured simple, easy-to-follow rules for the use of fertilizer to promote better farming efficiency by reducing per unit costs of production.

NPFI also has announced release of the twelfth in its Farm Radio News Service Series. The four speakers who will speak on timely farming subjects over a "network" of about 1,000 radio stations, include Dr. A. H. Moseman, director of crops research, Agricultural Research Service, USDA; Robert Howey, president, National Vocational Agricultural Teachers' Association; Donald A. Williams, Administrator, Soil Conservation Service, USDA; and Earl L. Butz, assistant Secretary of Agriculture.

### Fert. Section, NSC Holds Exec. Meet

A meeting of the Fertilizer Section, National Safety Council, Executive Committee was held in the offices of Spencer Chemical Co., Memphis, Tenn., on Wednesday, February 8.

In a report of the Engineering Committee, A. B. Pettit stated that the committee accomplished much during its meeting on Feb. 7—four instruction safety cards were approved, three accident prevention folders were completed, and two data sheets are in the making. Work on the TVA Mixers Data Sheet is to be started in the near future.

Tom Clarke reported that the membership chairman met with

Paul Truitt, NPFI, on January 24 to outline an intensive 90-day membership campaign, begun March 1.

The mid-summer meeting is tentatively scheduled for June 10 at Roanoke, Va.

### June Md. Meet for NE Branch, ASA

The Northeast Branch of the American Society of Agronomy will meet this year at College Park and Beltsville, Md., June 20-22. Hosts will be the University of Maryland and the USDA Plant Industry Station.

On the program are a number of invitational papers by widely known agriculturists and field trips to the Plant Industry Station soils and crops labs and field trials and University of Maryland experimental farms.

### NPFI, TVA Plan Tech. Data Exchange

Arrangements are being made for exchange of technical information between TVA and the National Plant Food Institute, TVA reports.

Prior to creation of NPFI last year, TVA had a similar arrangement with the National Fertilizer Association. Technicians from NFA met periodically with TVA research and development staffs to exchange information and advice on the problems and findings relating to fertilizer process research and fertilizer distribution and use.

### Select Heads for SAACI Committees

Al Wohlwend of Stauffer Chemical Co. and Harry D. Watson of Olin Mathieson Chemical Corp.'s International Chemicals Div. have been named auditing and entertainment committee heads, respectively, of the

Salesmen's Association of the American Chemical Industry.

### Stat. Supplement To MCA Handbook

The first supplement to the fourth edition of the *Chemical Statistics Handbook* has been published by the Manufacturing Chemists' Association.

Containing up-to-date information in tabular form on wage, hour, employment, production and price trends in the chemical industry as compared with all manufacturing, through October, 1955, "Statistical Summary No. 1" is available at 60 cents per copy from MCA, 1625 Eye St., N. W., Washington 6, D. C.

### Date Changed for SCPFES Meeting

Date for the fall convention of the South Carolina Plant Food Educational Society has been changed from Sept. 6 to Aug. 30, because of a conflict with another important meeting, reports J. R. Fulton, Secretary-Treasurer.

The program will begin at 12 noon at the Clemson House, Clemson, S. C.

### CFA Tractor Gift, Increase in Board

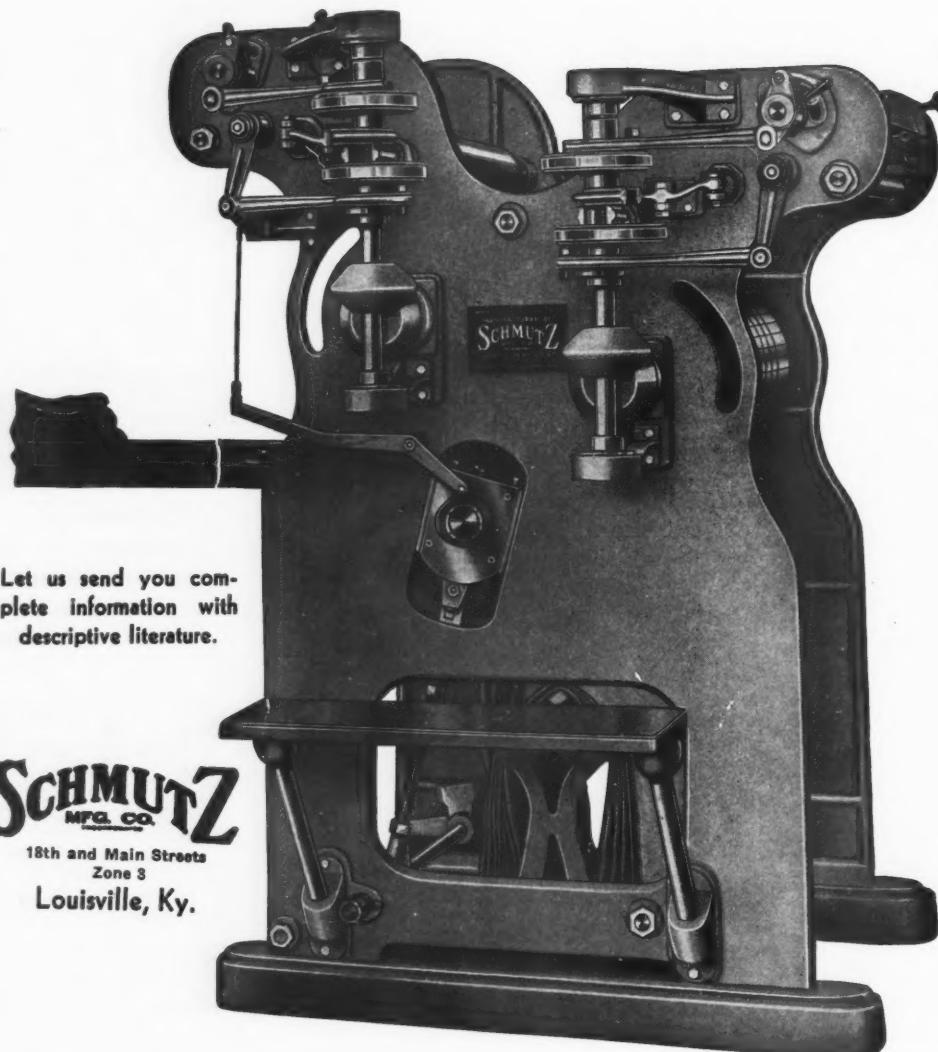
A new cultivator type wheel tractor, equipped for application of dry and liquid fertilizers, has been donated to the University of California by the Soil Improvement Committee, California Fertilizer Association.

John C. Anderson, Agriform Co. president, has been elected to the CFA board of directors, filling one of three new seats on the board created to provide better representation of liquid fertilizer suppliers and full geographical coverage of the state.

The group reports that its 33rd annual convention is scheduled for Nov. 11-13 at the del Coronado Hotel, Coronado, Calif.

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THE MOST MODERN  
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Manufactured in  
One, Two, Three and Four Colors for  
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Cotton and Burlap, new or used.



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Zone 3  
Louisville, Ky.

Cable Address "SCHMUTZ"—Long Distance Phone CLAY 7771

## Chemicals

### 104—BHC & Eutectics

Pennsalt's high gamma BHC technical, averaging 14 per cent isomer, is ideal for the company's original eutectic process. The process offers an improved technique in preparing BHC-DDT cotton dusts and concentrates providing a uniformly impregnated dust with minimum milling or grinding. The Pence high gamma BHC is economical to process, permits formulation of more highly concentrated materials and a higher quality cotton dust. For a technical bulletin on this material, *formulators* only can

CIRCLE 104 ON SERVICE CARD

### 105—Copper Sulfate

Triangle Brand copper sulfate is produced by Phelps-Dodge Refining in three forms for fungicide and fertilizer formulations—Instant, powdered for quick mixing of Bordeaux sprays; Diamond, a snow form of small or large crystals containing 25.2 per cent metallic copper and Basic, powdered form containing 53 per cent metallic copper. For further information on these materials and their application to your formulations

CIRCLE 105 ON SERVICE CARD

### 106—Fumarin Rodenticide

Now available to formulators is Fumarin anti-coagulant chemical developed by American Chemical Paint. The rodenticide has undergone a full government test program and now has several years of commercial use by professional operators. It is produced by ACP as a concentrate to be formulated with baiting material to make a ready-to-use rat and mouse killer for sale under your brand. For information

CIRCLE 106 ON SERVICE CARD

### 107—Better Coverage

For better coverage, uniform wetting and increased kill, National Aniline suggests that you use Nacconol wetting agent in your pesticide formulations. The material is available in physical form to suit every need and to save time and money in your processing. It adds the important wetting and sticking properties that increase kill and boost your sales. To obtain prices and suggestions on formulations *formulators* only can

CIRCLE 107 ON SERVICE CARD

### 108—Borate Weed Killers

Four borate weed killers from Pacific Coast Borax provide non-selective herbicidal powers of specific value in both agriculture and industry. There is Ureabor, a complex of sodium borate and substituted urea featuring low application rates; DB Granular, 2,4-D and sodium borates combined for control of deep-rooted noxious weeds at low application rates; Polybor-Chlorate, highly soluble for spray or dry use; and Concentrated Borascu, a granular material with long residual action. For literature

CIRCLE 108 ON SERVICE CARD

FREE INFORMATION to help you  
solve fertilizer, pesticide problems

## Reader Service

### 109—Versenol Chelate

Iron starvation in all types of soil can be overcome with Dow's Versenol iron chelate. The material makes soluble iron available to plants and can add a selling plus to your fertilizer. Two forms are available, the straight material and the chelate absorbed on vermiculite for ease in mixing with dry fertilizer. Both are available in bulk packages. Literature is available to companies formulating plant foods for citrus and truck growers.

CIRCLE 109 ON SERVICE CARD

### 110—Sinclair Nitrogen

More nitrogen will soon be available in the Midwest, this time from the new Hammond, Ind., plant of Sinclair Chemicals. The company, producing anhydrous ammonia and nitrogen fertilizer solutions, will offer fast, low cost delivery via its fleet of tank cars and tank trucks. Sinclair is constructing large storage facilities to meet demands during critical periods. For information on how this new plant can serve you

CIRCLE 110 ON SERVICE CARD

### How to use the READER SERVICE CARD

- Circle number of literature you want.
- Print or type your name, position, company and address.
- Clip and mail the Service Card.

### 111—Cal-Mag Oxides

National Lime & Stone now produces cal-mag oxides in two screen sizes and offers prompt shipment from its Ohio plant. Termed superior for dehydrating, neutralizing and curing factors, the dolomitic quick lime analyzes 40.39 MgO, 58.07 CaO and 203.88 TNP. The firm also produces dolomitic hydrated lime (165 TNP) and kiln dried raw dolomite (107 TNP), screened to size. For complete information

CIRCLE 111 ON SERVICE CARD

### 112—Sohio Solutions

A complete line of Sohio nitrogen solutions opens new opportunities in formulation for fertilizer manufacturers, says the producer. There is a broad selection of physical and chemical characteristics, total N content and percentage of free ammonia to provide you with greater flexibility in formulation and manufacture and a better chance to cut costs. A technical service staff is available to assist you and Sohio offers speed delivery in 3 days or less. For information on Sohio solutions

CIRCLE 112 ON SERVICE CARD

### 113—Nu-Iron

A new iron compound has been placed on the market by Tennessee Corp. to serve a variety of applications. Nu-Iron can be applied as spray or dust to foliage, is compatible in mixtures with common spray materials and is not affected by soil pH. It contains 30 per cent iron as metallic, has excellent storage stability and shelf life and is neutral in character and readily suspensable. It is especially recommended for use on evergreens, ornamentals, fruits, grasses, vegetables and flowering plants. For data and prices, *formulators, distributors and repackers* only can

CIRCLE 113 ON SERVICE CARD

### 114—Vitreous Package

Deere's Grand River Chemical Div. has available a packet of folders describing Vitrea fertilizer compound (45 per cent nitrogen from urea) and its applications. The division has also issued a useful wheel-type calculator that makes a simple task of figuring pounds per acre and acres per ton of various nitrogen fertilizers. For both items

CIRCLE 114 ON SERVICE CARD

### 115—Tuscola Materials

At Tuscola, Ill., U. S. Industrial Chemicals is already producing NH<sub>3</sub>, nitrogen solutions and sulfuric acid for the fertilizer trade and will soon add wet process phosphoric acid. The new facilities, scheduled on stream at the end of 1956, will have a design capacity of 30,000 tons of P<sub>2</sub>O<sub>5</sub>. A steady supply of ammonia and solutions is available plus a quantity of process-spent sulfuric acid suited to fertilizer production.

CIRCLE 115 ON SERVICE CARD

## 116—Moly Literature

Chemical bulletins available from Climax Molybdenum are listed with brief descriptions in a new publication. Included are 14 items covering research and commercial developments in agriculture and animal nutrition. An order blank is included so you can obtain the desired materials. For these sheets

CIRCLE 116 ON SERVICE CARD

## Process Equipt.

### 117—Micron Grinder

The Micronizer, says Sturtevant Mill, is an ideal grinder for production of insecticide compounds. It provides high speed reduction to micron sizes without attritional heat. The product has an increased surface area which means greater bulk for better dispersion and wettability and requiring less wetting agent. Seven sizes are available, all constructed for quick accessibility and easy maintenance. To get a descriptive bulletin

CIRCLE 117 ON SERVICE CARD

### 118—Accurate Sizing

For high-capacity, accurate sizing of fine or light materials, Link-Belt suggests its UP vibrating screens, featuring positive action and higher frequency vibration. You can cut operating costs and get more volume per square foot. For a brochure with more data

CIRCLE 118 ON SERVICE CARD

### 119—Pilot Plant Dryer

Hardinge has issued a data sheet on the Type XC Ruggles-Cole portable pilot plant or laboratory rotary dryer. This single shell, steam tube unit was designed especially for lab use but is also applicable for small capacity unit processes requiring low temperature drying, either intermittently or continuously.

CIRCLE 119 ON SERVICE CARD

### 120—Cooling Tower

Use this item for construction and operational details of the new Foster Wheeler induced draft cooling tower. A four page publication includes a three-dimensional wash drawing of a tower cell and perspective drawings of major equipment features including water-mixer drift eliminators, full cone spray nozzles and double diamond fill racks.

CIRCLE 120 ON SERVICE CARD

**See pages 54, 59, 60 for information  
on these Reader Service numbers—**

131—Isomal 265  
132—Pre-Bilt Units  
133—TL-11 Tracto Loader  
134—Zip-Top Bags  
135—Model SS Screen

141—Hoffer Soil Sampler

136—Baughman K-5 Line  
137—Bemis Fert. Packer  
138—BB Rotary Feeder  
139—Williams Gauge  
140—Vibrolator SAH-10

## Materials Handling

### 121—Fast & Maneuverable

You don't have to stop to shift with Clark Equipment's Michigan 12B tractor shovel; one push of a single power-shift lever provides high, low or reverse. An exclusive power-shift transmission and torque converter eliminates the clutch pedal and engine clutch. This system also permits fast, more maneuverable operation in boxcars and other tight quarters. The Model 12B is available on a no-down-payment lease plan. For a data sheet

CIRCLE 121 ON SERVICE CARD

### 122—Pallet Truck

Shorter than most pallet-type trucks, the Towmotor model W pallet truck offers high maneuverability combined with a traction motor for top power on grades and better speed on level surfaces. It stands 46 inches high, with handle vertical, has a maximum 29 inch width and a capacity of 4,000 lbs. Two hydraulic cylinders provide lifting power. For a catalog with the complete story

CIRCLE 122 ON SERVICE CARD

## Packaging

### 123—Bagpak Pallet

Multiwall bags can now be shipped by International Paper in a new Bagpak Pallet at no extra charge. Advantages include the elimination of damaged bags, no distortion of sacks, neater and safer storing, complete protection for dust or contamination and savings in handling and storage. A replaceable cover feature protects unused bags. Shipping weights run 1500-1800 lbs. For details

CIRCLE 123 ON SERVICE CARD

### 124—Zip-Top Bags

Arkell & Smiths points out the necessity of using an attractive and efficient package for your products. Zip-Top multiwalls are now produced by A&S, a development designed to improve opening efficiency. Your customer can open the sack and pour the contents through a smooth, wide multiwall mouth with no lost time. One sharp pull is all that's required. For more information

CIRCLE 124 ON SERVICE CARD

## Storage

### 125—Hortonspheres

For storage of anhydrous ammonia, Chicago Bridge & Iron produces Hortonspheres in sizes to 30,000 bbls. and in pressures to 217 lbs. per sq. in. in the smaller sizes. Curry Chemical has a 15,000 bbl. unit at Funk, Neb., with 75 psi working pressure that is insulated and refrigerated to guard against loss of NH<sub>3</sub>. The welded steel structure is designed to withstand internal pressure and will not allow contents to escape so long as the setting of the pressure relief valves is not exceeded. For more information

CIRCLE 125 ON SERVICE CARD

## Application

### 126—GunJet Sprays

GunJet No. 42 spray guns from Spraying Systems offer extra long "four-finger" trigger for comfortable use. The units, equipped with both adjustable trigger stop and a trigger lock, are available for pressures up to 800 pounds. A full choice of types and capacities are available in brass and aluminum. For a bulletin

CIRCLE 126 ON SERVICE CARD

## Miscellaneous

### 127—Wanted: New Industry

Moncks Corner, S. C., Chamber of Commerce has issued an attractive booklet describing Berkeley county, its resources and opportunities. Included in the area are the Santee-Cooper hydroelectric project, the Bushy Park industrial park and an inexhaustible supply of fresh water. Other advantages says the CoC: climate, good native labor supply, county taxes waived for the first 5 years and unmatched recreational facilities. For a copy

CIRCLE 127 ON SERVICE CARD

### 128—Corrosion Proofing

Information on corrosion proofing materials and techniques is contained in a new 8-page illustrated Pennsalt booklet. Detailed material is provided on cement mortars, interliners for masonry construction and protective coatings and linings for surface treatment. Charts are provided for general use in selecting Pennsalt coatings or linings suitable in various corrosive ranges.

CIRCLE 128 ON SERVICE CARD

### 129—Platinum Catalysts

An interesting review of the platinum group metals as catalysts is contained in a new booklet from Baker & Co. Outlining the general advantages and applications of these catalysts in diversified applications, it includes a technical division with sections on the catalytic oxidation of ammonia and gas purification and measurement of impurities in gases. For a copy

CIRCLE 129 ON SERVICE CARD

### 130—Neoprene W. Bulletin

A new bulletin on Neoprene W has been issued by Carbofine. The material is termed an economical single-package synthetic rubber coating for use in corrosive atmospheres. Included is information on basic characteristics including uses, application, resistance and weathering properties. For a copy

CIRCLE 130 ON SERVICE CARD

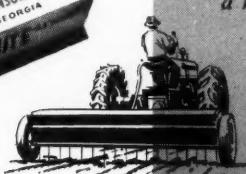
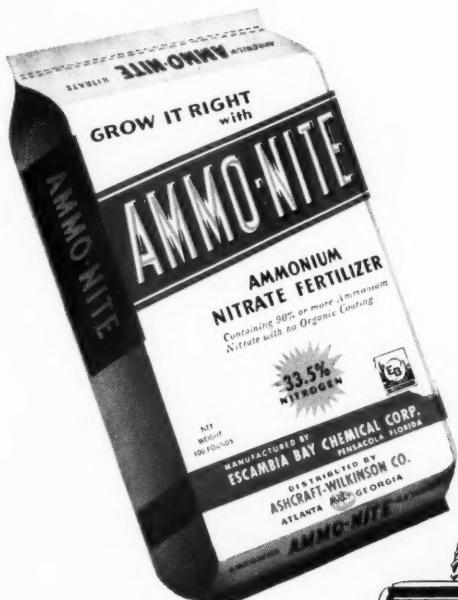
# NOW ON STREAM!



# AMMO-NITE

## AMMONIUM NITRATE FERTILIZER

Containing 33.5% Nitrogen



**GROW IT RIGHT WITH  
AMMO-NITE!**

Products of the Escambia Bay Chemical Corporation, Pensacola, Florida, are distributed exclusively by  
**ASHCRAFT-WILKINSON COMPANY, Atlanta, Georgia**

Escambia Bay Chemical Corporation, Pensacola, Florida — the only plant of its type on the Gulf Coast, east of New Orleans!

**NOW PRODUCING A CONTINUOUS  
SUPPLY OF ANHYDROUS AMMONIA,  
NITRIC ACID, BAY-SOL NITROGEN  
SOLUTIONS, AND—**

Sell AMMO-NITE... and you can offer your customers *more* Nitrogen for *less* money than other plant food forms. Simple arithmetic proves it! More Nitrogen in every bag means less bulk and weight for you and your customers. Uniform AMMO-NITE prills flow freely, spread evenly — never clog or stick in the spreader. AMMO-NITE leaches far less, too! New *stay-dry* bags keep AMMO-NITE in perfect condition in any weather. Order now. *It's a money-maker!*

A

**Winning Hand . . .**  
**5 PHILLIPS**  
**Fertilizer**  
**Materials for**  
**High**  
**Analysis**  
**Mixtures**

**3 Nitrogen Solutions**



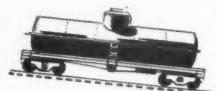
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# VIEWING WASHINGTON

with Farm Chemicals  
Washington Bureau

## on agriculture

**Greater farmer buying power seemed in prospect** as Congress put finishing touches on the proposed 1956 farm law. But there was still doubt, at a late hour, over a presidential veto of the compromise measure because the bill contained considerably more than the Administration had asked for. Thus, if the farm bill was vetoed, and the odds seemed to favor this, there was almost no chance that a new measure could get through Congress in time to affect this year's farm programs or income.

**Presidential approval promised to boost 1956 farm income close to \$1 billion . . .** at least half of this in the politically-sensitive Midwest. The Administration's flexible price support program was left on the books, but a series of gimmicks and gadgets almost nullified the effect. Price supports for corn, wheat, cotton, peanuts and rice would be held at about 85 per cent of 1956 parity.

**Here, generally, are the farm law changes** as proposed in the bill prepared for the White House:

**Soil bank.** A fund of \$1,200 million would be set up to pay farmers to underplant acre allotments and to reduce plantings of crops not under control. Soil bank participation would be voluntary this year, then would become a condition for receiving price supports.

**Parity.** The bill proposed that USDA set price supports based on the higher of a parity formula used in recent years, and a new formula. This change would have the effect of boosting price support of corn 12 cents a bushel over the announced level, wheat 22 cents a bushel and cotton about \$2 a bale. Another clause would in effect increase the support rate of oats, barley, rye and grain sorghums by 12 per cent.

**Acre allotments.** Corn allotments of 43.4 million acres in the commercial areas would be substituted by a "base acreage" program permitting the planting of 51 million acres in that area. Wheat allotment would continue at 55 million acres but farmers could plant all they wanted, provided none was sold. After 1956, a two-price system for wheat could, if farmer approved, bring support at 100 per cent of parity for domestic food wheat and a lower price for exports. There would be no allotments. Cotton acreage would be kept at this year's 17.4 million acres for 1957 and 1958.

**Subsidy ceilings.** It was proposed that no single farm operator be paid more than \$100,000 a year in price support payments. No individual would get over \$25,000 in a year for under-planting allotment crops, nor more than \$7,500 in rental payments for idling non-allotment cropland.

**A moderate reduction in acres planted to 1956 crops** from 1955 levels is in prospect. USDA's March planting intentions survey indicates farmers plan to plant 352 million acres to 59 principal crops this year. This would be the smallest total in 14 years, 3 million acres less than in 1955.

**Biggest single reduction apparently is to be in corn** with total forecast at 78.7 million acres, compared to 81.6 million last year, the smallest planting since USDA began reporting planted acreages in 1926.

**Soybeans** will get most of the land taken out of corn. A record soy acreage is in sight—21.8 million acres, 2 million over last year.

**Tobacco acreage will be reduced 10 per cent from 1955**, to 1.4 million acres. No cotton acreage survey is made until July 1, but indications are that growers will slightly underplant the 17.4 million acre allotment.

# VIEWING WASHINGTON

## on business

**Part of the national stockpile of pyrethrum extract** held by the Federal government will be put on the market starting September 17. The government's house keeping agency, the General Services Administration, says the development of substitutes, such as the synthetic chemical allethrin, is the reason for reduction of government stocks.

**About 57,000 pounds of pyrethrum extract will be fed** into the market over a 12-month period, GSA says, and at the going market price. The pyrethrum market level at the time of the announcement was about \$10 a pound. The material is stored in 50-gallon drums at various stockpile locations.

**The plan to release the material** is designed to protect the government against avoidable loss—and producers, processors and consumers against avoidable disruption of their usual markets. The US normally uses between 400,000 and 500,000 pounds of extract a year.

**A new survey of US investment in Latin America** is being launched by the Office of Business Economics of the Department of Commerce. Idea is to measure for the first time the overall contribution of US-owned enterprises to the economics of countries in Latin America. These enterprises represent an investment of \$6½ billion—about one-third of all US private direct investments abroad. Over 500 US firms are being asked to cooperate by providing information covering the operations in 1955 of their 2,000 Latin American subsidiaries and branches.

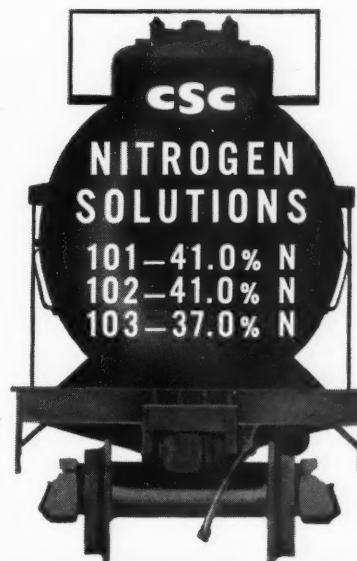
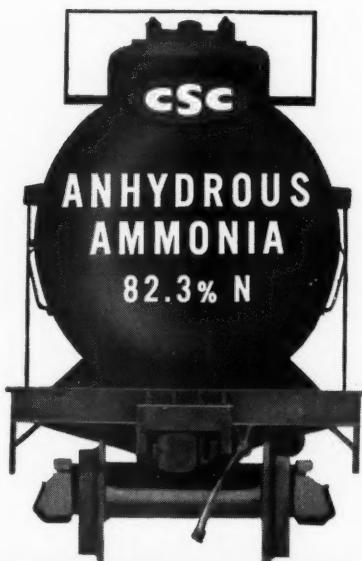
**American Potash Institute** reports that North American deliveries of potash during 1955 totaled 3.7 million tons of salts containing an equivalent of 2.2 million tons of K<sub>2</sub>O. That's a 7 per cent increase over 1954. Deliveries for agricultural purposes during the year were 1.9 million tons K<sub>2</sub>O—only about 3 per cent over a year earlier. Muriate of potash comprised about 94 per cent of the total K<sub>2</sub>O delivered for farm purposes.

**The chemical manufacturing industry plans outlays** for new plant and equipment of \$1,426 million in 1956—about 40 per cent greater than in 1955. This expenditure would be just short of 1953 outlays, which totaled \$1,428 million. These plans are revealed in the annual survey of business anticipations conducted from late January to early March by the Commerce Department and the Securities and Exchange Commission.

**Outlay in capital expenditures for US business on the whole** is forecast at \$35,000 million, 22 per cent more than the record expenditures of 1955. The upward trend in spending is expected to continue throughout 1956. Businessmen in every major industry group also anticipate that sales in 1956 will top 1955 totals. Manufacturers expect a 6 per cent rise; trade firms anticipate sales 4 per cent higher, and the public utilities expect a 9 per cent rise.

**Expenditures are scheduled to rise** from an annual rate of \$31,500 million in the fourth quarter of last year to a rate of \$33,250 million in the first quarter of this year, and \$35,250 million in the second quarter.

For the chemicals industry, the expenditure trend goes like this, according to the survey: Last quarter of 1955 it was \$317 million . . . first quarter of 1956, about \$310 million . . . second quarter of 1956, about \$340 million.



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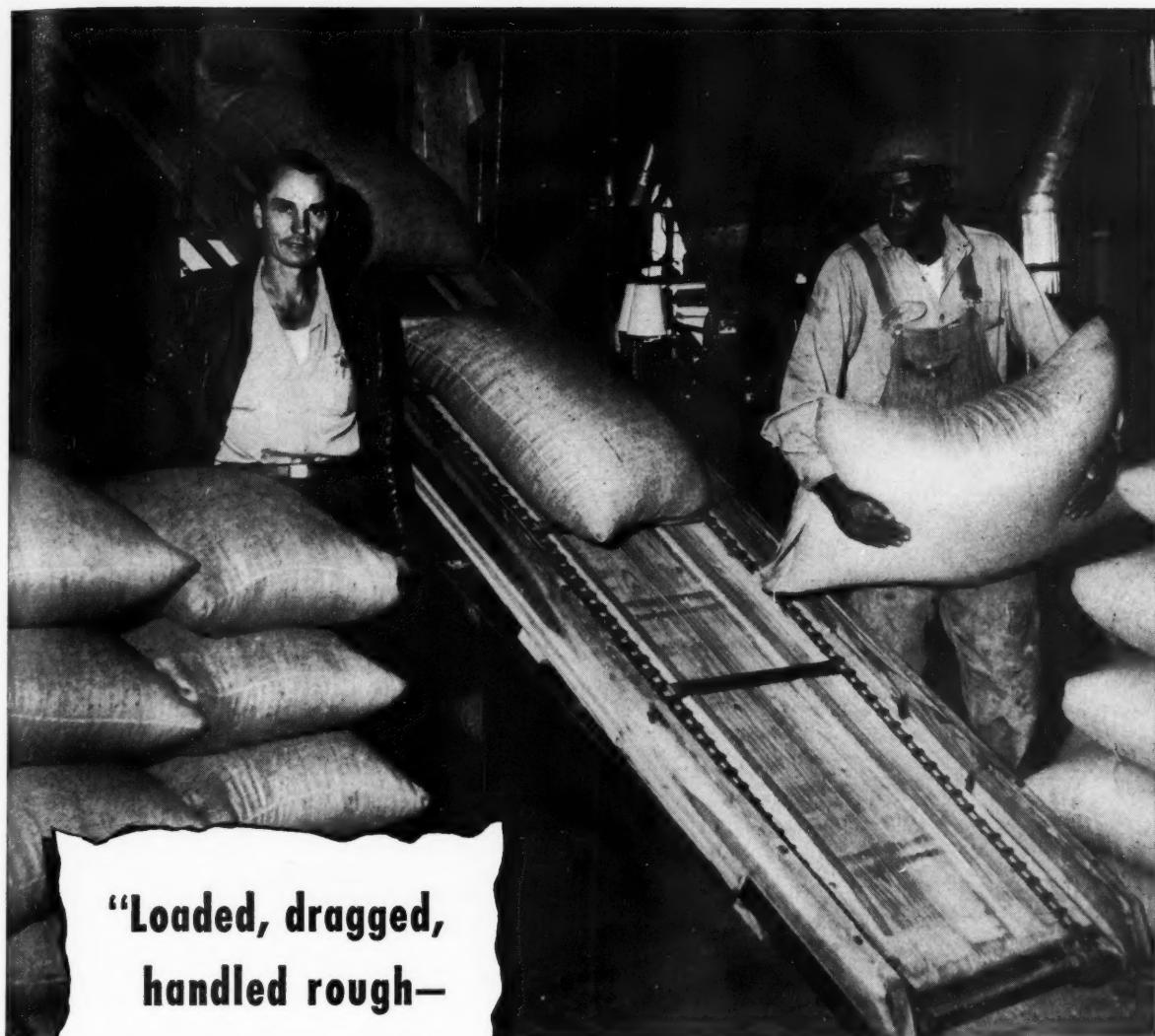
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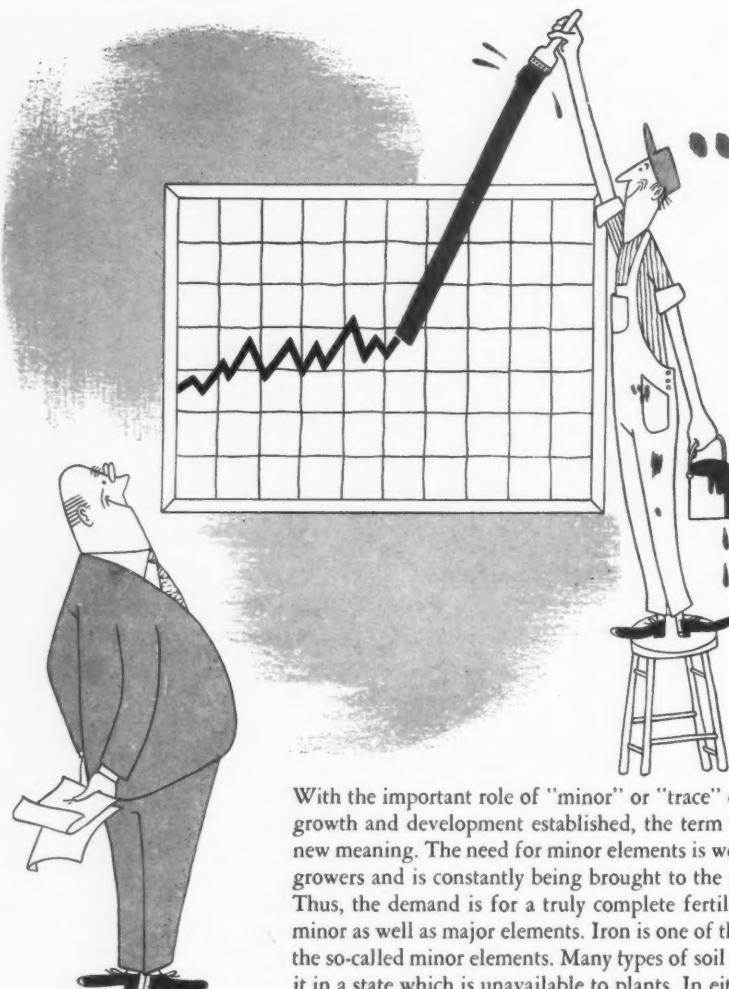


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# NAC Says 'Read the Label'

## Pesticide Safety Emphasized at Florida Meeting

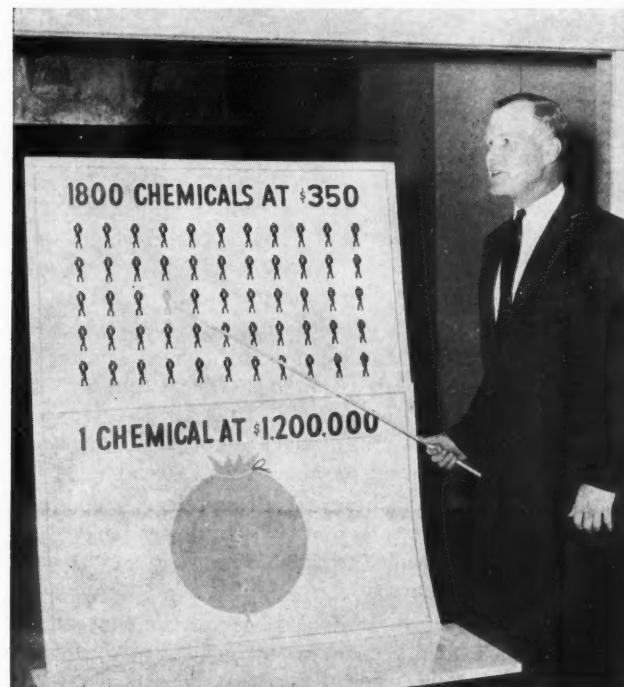
WEATHER-DISRUPTED plane flights and the minor irritations of an over-sold hotel had little effect on a highly successful meeting of the National Agricultural Chemicals Association, March 14-16 at Florida's Hollywood Beach Hotel. A fine program, warm sun, Gulfstream park, jai alai and the greyhounds all contributed to a well received convention.

Safety with pesticides was featured at the meet and NAC President W. W. Allen suggested that the affair be dedicated to a "Read the Label" message. Labels are now under closer scrutiny than ever for highly detailed accuracy, he pointed out, and "if we don't renew the 'READ THE LABEL' campaign and stick with it, I predict that there will be far more trouble for this failure than from all other classes of misuse combined."

NAC's six-point safety program, as outlined by Allen, includes a kit of materials for member companies, clinical memoranda on economic poisons, cooperation with the National Safety Council, publicity in farm publications and projected medical displays now "seriously considered for state and county medical associations."

"There will never be a better time to shift over to hard, positive selling," he stated. The industry's story is basically twofold—pesticides can be used safely if users will read labels and follow directions—proper use will bring increased grower profits and a better supply of quality foods.

Defensive actions currently taken by NAC, said



John A. Field points out that development of a single pesticide material may involve initial screening of 1,800 compounds at a cost of \$350 each. Final cost of the one commercial material found may reach \$1,200,000.

Lea S. Hitchner, NAC executive secretary, include work on problems such as the Hoover committee reports involving FDA and USDA shifts in regulation and administration, proposals for coloration of seed treating chemicals, added legislation and adverse publicity and misleading information.

The NAC herbicide program, he reported, is being expanded with two more radio platters and a TV short, and the association is developing four radio talks on fungicides, the first made on this subject.

J. A. Field, Carbide & Carbon Chemical Company, termed the industry a teen-ager in his interesting talk, on a basis of past and future growth, rapidity of change and the period of time since introduction of the first organics.

Describing the costs of research and development, Field noted that one successful pesticide requires

synthesis and biological screening of about 1,800 materials and a possible investment of \$1,200,000.

Field described these three development procedures in addition to research testing:

1. Process Development. Required to determine how the product can be made most economically, this phase should begin soon as a new pesticide shows promise.
2. Pilot Plant. Supplies both quantities needed for sales development and operating data for design of a large scale plant.
3. Engineering. The engineering department should be brought in once it appears a product has commercial promise to design, erect and provide initial operation of the most economical plant.

Market development, continued Field, should progress concurrent with the later stages of research and engineering, and include these simultaneous steps:

**Market Study.** "It is here," he noted, "that we must first be coldly objective." This includes study of not only the market but selling price, production costs, raw materials and investment.

**Timing.** The overall objective is to reach the farmer at the earliest possible moment—once effectiveness and law requirements have been satisfied. There should be no publicity, Field stressed, until evidence shows the product can be produced cheaply enough to meet the requirements of intended use.

**Physical & Chemical Properties.** Soon as a development program is found desirable, these should be studied to the maximum extent consistent with economy.

**Formulation.** It should be easy to use, concentrated enough to be economical, designed to place chemical in its most efficient form, stable, unaffected by temperature extremes and free from blocking or separating in storage. Field also mentioned the importance of containers and a thorough literature search for chemical property data.

**Product Specifications.** Limits must be developed

that guarantee consistent physical and chemical properties in each shipment. They must be lenient enough to permit economic production, he added, and can be tightened as production experience is gained.

**Toxicological Data & Residues.** This analytical work may well add \$100,000 to the cost of a chemical.

**Labeling.** All claims must be true and pertinent, stated clearly, concisely and forcefully in language the farmer understands.

**Patent Considerations.** Adequate attention to obtaining patent protection, said Field, is vital in recouping research costs.

**Advertising & Publicity.** The purpose of these functions is not one sale, but to build a market. Advertising should inform the user and explain where the product can be obtained.

Informing extension and experiment station personnel, commented Field, is half the battle. Technical sheets should be prepared especially for their use, some sales literature should be directed to them and all literature must be made available.

"We cannot build a sound business on unsound distribution," Field concluded, "we must show management a way of getting a return on their investment." The industry will grow to maturity "only if we realistically analyze our markets, intelligently develop each new chemical, pursue a vigorous advertising and publicity campaign, merchandise in an orderly manner and sell vigorously and honestly."

In developing fungicides, said Dr. Geo. L. McNew, managing director of Boyce Thompson Institute, materials are relatively easy to discover but the ratio will decrease as more obvious compounds are screened and the search widens.

Research methods must be improved, he said, so there will be less empirical testing and more programs based on sound deductive reasoning. This research on methods, he noted, is 30 years overdue. McNew called for development of basic principles on mechanism of fungicide action and the relationship of chemical structure to phytotoxicity.

Where are the industry's principal new markets? McNew noted that if half the food and fiber losses on farm and in storage were eliminated, the public would benefit by some 1.7 billion dollars. Assuming, he continued, that farmers will pay only one dollar for each 10 dollars of potential gain, this indicates a consumer level market of \$175 million and a \$85 million sales volume for primary producers.

A market of this scope, he claimed, justifies annual expenditure of three million dollars for research on agricultural fungicides. McNew suggested four major areas in which such funds might be profitably invested.

Lea S. Hitchner, NAC Association executive secretary, delivering his report as F. W. Hatch of Shell Chemical Corporation, vice president of NAC, listens.



1. *Soil fungicides and nematocides.* Root rots, he noted, are the most under-evaluated problem facing the farmer today costing some five per cent of many major crops, a figure that may be but a half or a third of the actual total.

Soil disinfecting chemicals should be applied regularly to millions of acres for control of nematodes, fungi and bacteria. For such materials, he estimated, the market price could be \$35/acre repeated every third year but a cost of \$200-\$300/acre would be acceptable only on high cost crops.

2. *Bactericidal chemicals.* Although bacterial diseases are not so numerous or widespread as fungi, there are about 20 very destructive species. Antibiotics have given effective control but their cost is now a serious handicap to widespread use.

3. *Rust and powdery mildew eradicants* that can be used at low dosages per acre by aerial application. The case for chemical control is good, said McNew. Farmers can no longer endure severe losses for several years while breeders develop new resistant stocks.

4. *Systemic protectants.* Most modern organic fungicides, he noted, are improperly designed for use as systemics because a premium has been placed on the lipophylic-hydrophylic balance. Systemics should not have exceptional lipophylic properties, continued the researcher. They must remain mobile in the cytoplasmic fluids, hence require polar groups.

A new type of molecule is required and this focuses attention on antibiotics since they are natural constituents of living cells, develop in large quantities without being detoxified and remain mobile in cytoplasmic fluids.

Dr. H. L. Haller, assistant director of crops research, ARS, USDA, also took a look at pesticide needs, describing various potential opportunities. He cited the need for materials to control soil-inhabiting insects, nematodes and diseases and suggested that more study be devoted to granular formulations.

As we turn to improved grasslands, he continued, insecticides for control of range and grassland pests will be of even greater urgency.

In weed control, Haller described millions of acres in the western U.S. which could be better utilized with improved herbicides.

Other opportunities for herbicides include control of vegetation on rights-of-way, power lines, railroads, etc.; selective control of vegetation on game land; and the removal of undesirable and competitive species in areas under reforestation.

Considering fungicides, Haller stated that the problem is no longer one of developing all-purpose materials but one of finding compounds for specific fungi. We need chemical controls of diseases of wheat and grains, he concluded, and treatments to free nematode-infested plants.

Lea Hitchner, in his semi-annual report, noted

## A Special Tribute



**Presentation ceremony honoring Mrs. Laura G. Arrington.** A gift was presented her on behalf of NAC by L. S. Hitchner (center) and F. W. Hatch (left).

In a special ceremony during the Hollywood Beach meeting, NAC paid tribute to Mrs. Laura G. Arrington, BDSA commodity industry analyst. A specialist in the pesticide field, Mrs. Arrington will retire on June 1 after 25 years of service in the commerce department.

Termed by NAC the "best informed woman in the field," she established a close and helpful relationship to the entire pesticides industry. As co-author of a confidential monthly pesticides report during World War II she assisted in keeping top government officials informed about the availability of these materials.

Later, working with the National Production Authority during the Korean conflict, Mrs. Arrington did "yeoman service" in activities ranging from trying to obtain scarce raw materials to making recommendations for pesticide plant expansions.

A widow, she plans to settle with her mother in Florida.

the potential market represented by the new highways program, which calls for 300-foot rights-of-way on major highways, providing 22 acres of roadside maintenance for each highway mile. Experts see, at the end of ten years, a \$20 million volume in pesticides.

Promotion of these fields, said Hitchner—soil



W. L. "Buster" Hancock, personal envoy of Florida Governor LeRoy Collins, presents FDA Commissioner George P. Lerrick (left) with a proclamation denoting the week of March 19-25 as Food and Drug Anniversary Week. J. J. Taylor, Florida State Chemist (center), looks on.

to a level competitive with synthetics and other materials.

NAC was thanked by FDA Commissioner George P. Lerrick for its cooperation in advising growers about the Miller bill and in stressing the importance of using pesticides according to label directions.

"To teach growers to use pesticides safely as well as effectively," he said, "is in many respects our biggest job. It is by all odds the best way to protect the public in this field." Lerrick expressed the hope that NAC will expand activities in this area and that government agencies can cooperate fully. "Like other types of safety education," he stressed, "this needs to be set up as a permanent and continuous activity."

W. W. Allen, in his presidential address, also reviewed effects of the Miller bill, stating that it "recognizes that almost any substance is harmless if you don't eat too much of it." One of its values has been, he commented, the resulting publicity on toxicity and safe use of pesticides accompanied by a broader public awareness of the industry and a better understanding of the basic problems.

Uses of atomic energy in agriculture were described by Sterling B. Hendricks, head of the Soil and Water Conservation Research Branch, ARS, USDA. It is difficult, he said, to assess the cost or probable future cost of atomic energy itself, but Hendricks did indicate its possible value including application as an energy source in nitrogen production.

Radioactivity offers various possibilities for preserving agricultural products through sterilization and in controlling insect infestations. Hendricks also pointed out some of the work that has been accomplished through the application of radioactive isotopes in determining pesticidal action, detoxification, and in tracing materials within the plant.

It appears that only 22,000 technical graduates will be available this year, said J. Wayne Reitz, president of the University of Florida, to fill the minimum industry requirements for 1956 of 60,000 graduates. A similar situation exists in agriculture he noted, with 15,000 available positions and only 8,500 agricultural and home economics graduates.

Reitz described the problems of maintaining a well balanced educational program and of limiting the numbers of students to those an instructor can guide effectively. Universities alone can neither increase their own resources, he warned, nor can they provide the entire incentive for encouraging higher education. Industry must continue to assume its share of the responsibility. ▲

insects, grasslands, expanded use of fungicides, forest and aquatic pests, etc., promoted on an industry-wide basis "should shorten the time to our maturity."

Another speaker who suggested areas in which pesticide research should be expanded was H. G. Johnston, National Cotton Council's head of research development. Pointing out that cotton is the industry's "biggest single customer," he emphasized the need of assisting cotton growers to cut production costs. This area, said Johnston, is "one of the most dynamic aspects of our whole industry."

If the cotton industry could reduce its prices over an extended period of time it would, said Johnston, discourage expansion of synthetic fiber facilities at home and production of both cotton and synthetics overseas. We must however, he warned, convince our mill customers that the price is likely to trend lower in years ahead; any gains will be only of a long-range nature.

A big assist from the pesticides industry, he suggested, would be development of herbicides that are completely selective in action and which could be relied upon for seasonal weed control.

Other possibilities include the use of chemical growth regulators to increase plant efficiency and to increase set and maturing boll load and materials that could be introduced into cotton plants for the specific purpose of improving fiber properties.

The NCC, Johnston continued, is also seeking private sources for funds—to build a research and education program and its sales promotion program

# MWSIC Joint Meeting

OME 600 persons registered at Chicago's Edgewater Beach Hotel during February to attend the 8th annual agronomist-industry meeting of the Middle West Soil Improvement Committee. They heard speakers on a well balanced program discuss industry problems, research data and application needs.

At the University of Illinois, reported Earl R. Swanson, Illiac, an automatic electronic digital computer is being used to solve agricultural linear programming problems.

While the researchers don't hope to work out "recipes" for large numbers of farms, said Swanson, "we do hope to get a more realistic conception of fitting the individual enterprises and practices into the total farm business. Since linear programming permits us to take so many more factors into account, it should help us in the long run to make better recommendations to farmers."

A. C. Caldwell discussed a series of University of Minnesota studies on problems of phosphorus usage including the efficiency of fused tri-calcium phosphate and superphosphate topdressed on established meadows. He noted that material broadcast in the spring and after removal of the first crop was effectively used by alfalfa. Absorption was greater from superphosphate than the fused tricalcium phosphate and was also greater at higher rates of application. In some cases one half of the phosphorus in a plant was found to have come from fertilizer.

Considering the effect of nitrogen on phosphorus absorption, Caldwell reported that urea and sodium nitrate did not significantly increase absorption in one series of tests. With nitrogen added in ammonia form, uptake of phosphorus was substantially increased.

Tonnage of pesticide-fertilizer mixtures in 1955, said J. W. Apple, reached 200,000—95 per cent containing insecticide materials. The South Atlantic area, the biggest consumer in 1953, continued to gain in 1954 and the Middle West showed a big increase in those two years.

**B. M. Machen, Lion Oil Co.; J. L. Naftel, Pacific Coast Borax Co.; H. B. Mann, American Potash Institute, and Z. H. Beers, Middle West Soil Imp. Comm.**

Although regional figures aren't available, Apple said it appears that the North Central states last year used close to one half of the total tonnage.

Commenting on University of Illinois research, L. T. Kurtz stated that it has been difficult to show the expected differences in efficiency of various nitrogen fertilizers. "Personally," he added, "I am beginning to doubt if the differences are really very large."

He cautioned, however, against extrapolating too far the data on which his comment was based. The nitrogen form may well be of importance under some weather conditions, he added, while questioning that such is the case under average weather conditions.

During the fertilizer mechanization portion of the meeting, Swift's Dwight Sanders reported that granulation appears to be advancing more in the Mid West than in the Southeast and that estimates indicate about half of Midwestern fertilizer will be granulated this year.

Bulk spreading does reduce production cost per acre, said J. D. Cook, Illinois Farm Supply, and helps the fertilizer manufacturer to spread his per ton production cost because the farmer tends to buy more than when he applies it himself.

Commenting on equipment needs, Vincent Sauchelli, Davison Chemical, stated that equipment people must realize the changes that have taken place in plant foods and the need for greater precision in application.

Dr. Geo. E. Smith suggested several ways in which equipment manufacturers can improve their products. The University of Missouri researcher pointed to such needs as enlarged applicator boxes, lowering of boxes and elimination of sharp edges and corners. Work should also be carried out, he added, on methods of placing fertilizer at the same time other operations are carried out. ▲





A fleet of Big N highway transports, like this one, keeps network of distributing stations supplied with Big N.

## Mid-South Chemical Corp. . . .

# Growing with Nitrogen

WHEN Ellis T. Woolfolk and J. D. Wooten founded Mid-South Chemical Company in 1949 they had three principal resources—faith in direct application of anhydrous ammonia as the best means to supply crop nitrogen, 20 years of success in oil marketing and a background in agriculture at the operational level.

Six years later, near the end of 1955, their organization was a sprawling young giant shaped chiefly by those guiding factors.

Woolfolk is president and Wooten vice-president of Mid-South Chemical Corporation which now operates from Texas almost to the Great Lakes, concentrating on placing its Big N brand anhydrous ammonia in the soil of more and more mid-America farms.

The original Mid-South Oil Company was formed during 1932 in partnership with Pure Oil Company and was built into a sizable marketing organization, then sold to Pure Oil in 1952.

Meanwhile, Wooten, through activities on the American Petroleum Institute's agricultural committee during 1946, learned of the direct soil application of anhydrous ammonia on the West Coast. Mississippi State College was well into its research on the subject at that time and this work was given

emphasis through the Delta Council, a regional organization headed by Woolfolk.

In 1947 a test distributing plant was built at Tunica, Miss., and operated so successfully that Mid-South Chemical was formed two years later to distribute  $\text{NH}_3$  through the mid-South within a 150 mile radius of Memphis.

Farms in this area, badly depleted in nitrogen, were served in an efficient manner by Mid-South. Aggressive farm level promotion coupled with the effective management quickly developed the firm into one of the largest nitrogen distributors west of the Rocky Mountains.

Complete coverage of its trading area was accomplished by establishing distributing stations at all important agricultural centers. By 1955, more than 75 were in operation in Mississippi, Arkansas, Tennessee, Alabama, Kentucky, Missouri and Louisiana.

Early last year, Mid-South built on Presidents Island, at Memphis, the nation's first river-rail-highway terminal. The move was designed to take advantage of economical water transportation from  $\text{NH}_3$  supply plants in the Gulf Coast area and to provide an efficient central point for distribution of ammonia throughout the Mid-South.

Special 800 ton barges with a capacity equal to 40 rail tank cars bring ammonia up the Mississippi river and unload into a battery of 30,000 gallon tanks. The cargo is unloaded in about seven hours.

From this terminal, ammonia is transshipped by railway tank cars and special transport trucks to points throughout the Mid-South area where distributors store it in 30,000 or 8,000 gallon tanks awaiting farm delivery.

Delivery is customarily made in 1,000 gallon tanks from which the farmer loads his tractor-operated field applicator.

In July, 1955, Cities Service Company and Continental Oil Company acquired an interest in Mid-South which then became the Mid-South Chemical Corporation. An accompanying expansion program brought erection of another water-rail terminal at Harlingen, Texas and expansion into the new areas of Louisiana, Illinois, Missouri and Iowa.

Cities Service and Continental Oil have announced plans for construction of an anhydrous ammonia

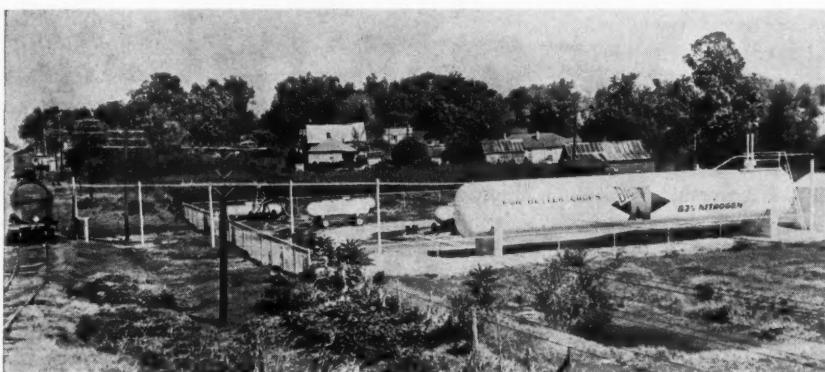
plant at Lake Charles, La., where they already have operating refineries, and will supply ammonia for Mid-South's growing agricultural market.

The program, based on river transportation, will include a series of terminals located on waterways throughout the Mississippi Valley and Gulf Coast.

Mid-South's sales approach is based on helping farmers to institute balanced fertility programs. Soil testing is considered the key step, and each distributor is equipped with proper materials for obtaining tests on any farm soil.

Results, according to this firm, will sell Big N ammonia better than any promotion, and Mid-South hopes to influence each customer to use the proper amounts of both this nitrogen source and other plant foods.

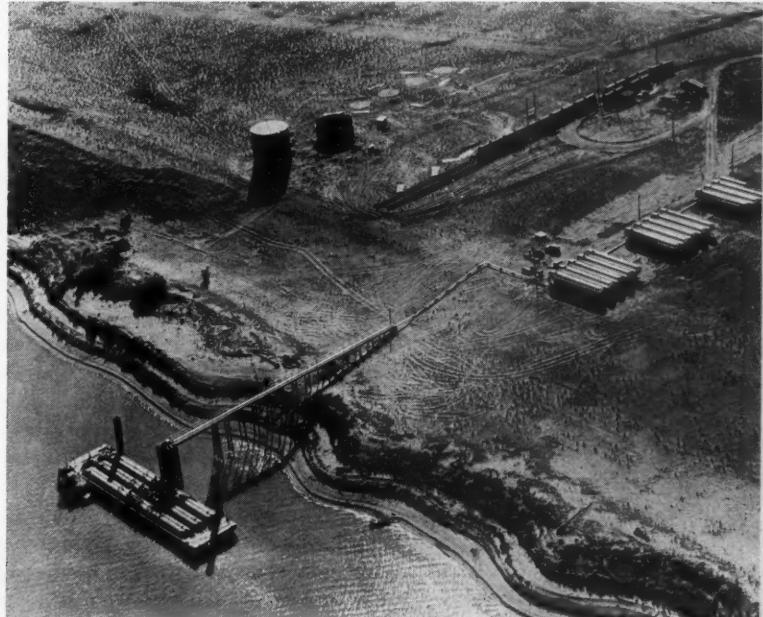
The company maintains its own soils laboratory and agronomic staff and works closely with agricultural colleges and farm leaders throughout its marketing territory. ▲



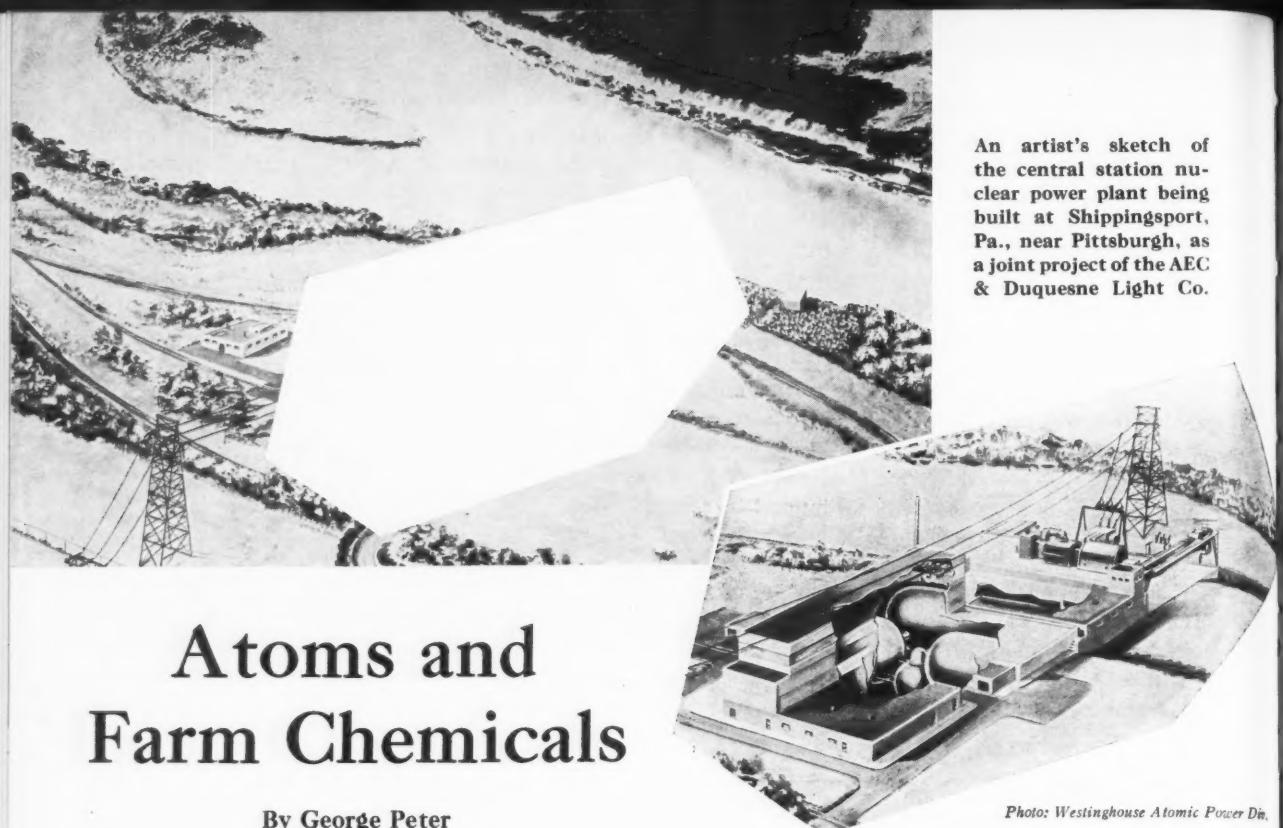
Typical Big N distributing station with 30,000 gallon tank and transmission line from RR siding at left. 1,000 gallon trailer tanks are seen in the center.

Anhydrous ammonia arrives by barge and is unloaded into 30,000 gallon tanks at Mid-South Chem. Corp.'s Memphis terminal.

W. T. Sample, agronomist, checks a soil analysis in Mid-South's Memphis laboratory. Soil testing is an important part of the Big N program.



APRIL, 1956



An artist's sketch of the central station nuclear power plant being built at Shippingport, Pa., near Pittsburgh, as a joint project of the AEC & Duquesne Light Co.

## Atoms and Farm Chemicals

By George Peter

**P**OWER FROM the atom is one of the most talked-about important national and international matters now before the public. The atomic age is upon us. But is it traveling so fast that sudden and disruptive changes are in store for the agricultural chemicals industry?

The following effort to answer this and similar questions is based on talks with spokesmen for Government agencies and industry concerned with the development of atomic energy and on the atom studies issued by them. Here is how fast the atomic age is getting started.

On a recent lazy Sunday afternoon, this reporter dropped in on a show at the Library of Congress titled "Atoms for Peace." A young couple on their honeymoon were standing before a model of a "packaged atomic plant." The sign read:

"A packaged atomic power plant, such as the one depicted here, can be transported by air to a remote site and quickly assembled. The United States is planning to build a prototype of this kind of atomic reactor near Washington, D. C."

In early March, eight months later, workmen excavated a petrified tree stump an estimated 80 million years old on the site selected for the Army's Nuclear Power Package Reactor at the Corps of Engineers' Research and Development Laboratories, Fort Belvoir, Virginia.

Millions of years to learn how to capture atomic energy. Only eight months to start building, once the government had lifted the lid on some of its atomic energy secrets.

*Photo: Westinghouse Atomic Power Div.*

America's first full scale nuclear plant has just entered the large scale construction stage in Pennsylvania on the outskirts of a tiny town called Shippingport, near the site of Fort Duquesne. It is being built as a cooperative effort by the Atomic Energy Commission, Duquesne Light Company and the Westinghouse Electric Corporation.

Far from being a portable job, the project began with ground breaking ceremonies only 18 months ago. On September 6, 1954, President Eisenhower waved a baton containing neutrons over a block of uranium in Denver, Colorado. Instantly, a fissionable reaction swept 1200 miles over the prairies to a giant tractor on the ground site. With no operator at the controls, the tractor moved forward and scooped up the first shovelful of earth.

The plant, known as a Pressurized Water Reactor, is not expected to produce economical power but rather to provide information that can only be obtained from the construction and operation of a full scale plant. Other types of reactors are being built and tested on a smaller scale throughout the country under the Atomic Energy Commission's program for reactor development.

The Duquesne Light Company is building the turbogenerator plant portion and has contracted to operate the entire plant for the Commission. Duquesne is also contributing \$5 million toward construction costs. The Commission, however, is primarily financing the reactor construction and research and development program. The plant will have a capacity of at least 60,000 electrical kilowatts.

In the face of these remarkable strides, however, public interest has been so stimulated to believe we are on the brink of full use of the atom on a commercial and economic basis that it has become necessary to stabilize general industry morale with some assurances.

A fertilizer scientist at USDA's experiment station at Beltsville, Maryland says: "There is nothing radical just around the corner—nothing to justify fears that atomic energy will bring sudden and disruptive changes in the industry, at any rate."

A Manufacturing Chemists' Association survey of 75 chemical companies regarding the impact of uses of atomic energy on the farm chemicals industry among others concluded that changes will be "evolutionary rather than revolutionary."

However, these same recommendations are not to be construed as advice to ignore trends. General J. E. Hull, U.S.A. (Ret.) MCA president, advises: "The impact of the atomic energy development on the existing chemical industry has already proved itself to be not only real—but very important as well."

In a report on the survey, the MCA also added: "We believe that the impact of the peaceful uses of atomic energy on our industry will be important, increasing, and continuing." The MCA membership consists of approximately 150 corporate members who account for over 90 per cent of the productive capacity in the U.S. for such products as pesticides, inorganic compounds, including acids and alkalies and their salts, and other chemicals.

High interest in the use of the radioactive isotope to trace the path of farm chemicals in plants and the promise of radiation as a preservative for raw farm products in storage is familiar news now to the farm chemicals industry, even though the fullest promise of these uses is still in the future.

But what is proving to be a new center of attraction for the chemical industry is the development of power itself through atomic energy. Dr. Sterling B. Hendricks, head soil and water chemist at USDA's Beltsville, Md. experiment station, says to realize that "a ton of granite due to its small uranium content has as much potential for energy as a ton of coal surely must hold the imagination."

Atomic Energy Commission and the Interior Department's Bureau of Mines report increasing interest on the part of some chemical companies in two experimental units. These are models of possible nuclear heating units except that they will be heated electrically. Planned by the Bureau of Mines in cooperation with the AEC, the first has been built and is in use at Morgantown, W. Va. and the second will be completed this spring.

Although the Bureau's immediate interest in such a process is in gasifying coal, experimenters report that chemical companies are keeping a close watch

on the extremely high temperatures possible from nuclear fission. The hope is that atomic energy might be economically harnessed to the production of nitrogenous compounds.

Despite all the gimmicks in actual energy production, the first full scale plant at Shippingport is expected to begin producing power in 1957. But, this fact also confront the budding atomic power industry with a dilemma. Who should assume the financial risks if the reactor suffers a community-size radioactive breakdown?

Other gimmicks to be overcome are: (1) atomic waste products or "hot stuff" jumping with radioactivity. After 10 years of splitting atoms, the Government still stores most of its waste in costly tanks, too costly for industry, and (2) production costs now couldn't begin to compare with the cost of producing heat or electricity by other means.

Of financial concern to manufacturers, distributors and applicators alike is the answer to the question: To what extent will atomic radiation and atomic isotopes affect the use of farm chemicals? The consensus so far holds that the gains should greatly outweigh any possible losses.

While the use of radiation in insect control, for example, has in one instance replaced chemicals in a limited area as screw worm fly control, the use of radioactive isotopes in following the changes of insecticides in insects promises to make their use more effective and make for wider use.

In the field of fertilizers, the idea that radiation and radioactive isotopes might be of direct value in the stimulation of plant growth has resulted in all but complete failure so far.

One more prediction by the experts: if atomic power can be produced cheaply, no longer will chemical plants having high heat or power demands have to locate at sites convenient to cheaper fuel. "Energy where you want it" could change the distribution pattern of the industry geographically.

Perhaps the strongest evidence of the importance of the chemical industry to private atomic energy development is the fact that AEC regards the reluctance of chemical industries to get into the business as a bottleneck, considering the high interest otherwise displayed by the industry.

But in applying atomic energy to the farm chemicals industry, we're at the stage where automobiles and planes were when the big questions were: Is the Stanley Steamer a good buy; what about Ford; and what is the outlook for the flying machine?

There are evidences that atomic energy is offering much "promise" to the industry, but little evidence pointing to such revolutionary changes as those accompanying the introduction of the new biologically active compounds of the last 10 years.

This means for the time being: Hold on to the products you have. ▲

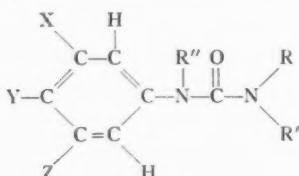
by Dr. Melvin Nord

## PATENT REVIEWS

### Phenyl Alkyl Ureas For Weed Control

US 2,726,150, issued Dec. 6, 1955 to Frederick J. Wolter and assigned to E. I. duPont de Nemours & Co., provides a class of herbicidal compositions containing a finely divided solid phenyl alkyl urea herbicidal agent dispersed in a mixture of an organic liquid and water.

The phenyl alkyl ureas employed have this formula:



where R is methyl or ethyl, R' is hydrogen or an alkyl having less than five carbon atoms, R'' is hydrogen or methyl, X and Z are hydrogen or halogen and Y is hydrogen, halogen, alkyl or alkoxy (up to three carbon atoms).

### Silica, Phosphate Separation Method

US 2,724,501, issued Nov. 22, 1955 to Clinton A. Hollingsworth and Jordan L. Webster and assigned to Smith-Douglass Co., Inc., describes a process for separating silica from phosphates by froth flotation.

A commercial fatty amine, such as n-octyl amine, is reacted with a limited amount of concentrated sulfuric acid in the presence of a substantial proportion of kerosene. The resulting product is an effective cationic collecting agent, possessing greater selectivity for silica than the unreacted fatty amine. The result is surprising, since the sulfate salts of

the fatty amines have been considered useless as flotation agents. The function of the kerosene is believed to be to act as a solvent or disperser of the amine and as a diluent.

### Sabadilla-Synergist For Thrip Control

US 2,726,188, issued Dec. 6, 1955 to John R. Allison and assigned to Leffingwell Co., describes an insecticidal composition for controlling citrus thrips.

According to the inventor, the presence of hydrated lime in commercial sabadilla seed adversely affects the toxic action of the seeds against citrus thrips, although it is advantageous in the case of other insects. He claims that the toxicity of sabadilla seed towards citrus thrips may be synergistically increased by combining the seed with a small amount of pyrethrins or rotenone. Sugar may be added as a bait for the insects and an inert filler such as bentonite may also be added.

### Method of Slowing Growth of Plants

US 2,723,909, issued Nov. 15, 1955 to Frank E. Denny and assigned to Boyce Thompson Institute for Plant Research Inc., provides a method for retarding the growth of plants.

The plant, while in a dormant state, is contacted with one of the following compounds: benzyl thiocyanate, O-chloro benzyl thiocyanate, benzyl salicylate, benzyl benzoate, benzyl acetate or benzyl chloroacetate. The plant growth is retarded temporarily but thereafter the plant undergoes nearly normal growth.

### Defoliating Plants With Iodide Salts

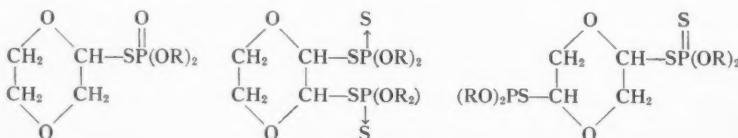
US 2,726,149, issued Dec. 6, 1955 to Loyd Q. Boyd and assigned to Standard Oil Co., describes a method of defoliating plants.

It has been discovered that water soluble inorganic iodide salts are highly effective for defoliating plants when applied to the leaves. This is noteworthy because the other water soluble inorganic halide salts including fluorides, chlorides and bromides, have practically no defoliating effect. ▲

### New Organic Thiocyanates

In a series of patents, US 2,725,327-333 issued Nov. 29, 1955, William R. Dively describes a number of organic thiophosphate compounds having pesticidal properties. The patents are assigned to Hercules Powder Co.

The compounds include, among others, the following types, in each case with R as a lower alkyl radical:



Other similar compounds, as well as methods of making them are also described in the patents.

# Chemicals

## Herbicide Patents Purchased by Dow

Several patents covering herbicidal compositions resistant to freezing and crystallization at low temperatures have been purchased by Dow Chemical Co. Formerly owned by U.S. Rubber Co., the patents, Nos. 2,721,124 through 2,721,133, were issued in the name of John C. R. Warren.

Under these patents Dow markets herbicides which include the ethyl, isopropyl, isobutyl, normal butyl and secondary butyl esters of 2,4-D and 2,4,5-T. Three Dow products that fall within this scope are butyl 2,4-dichlophenoxacetate, Brush Killer 50-50 and Esteron 76-E. Two others, Dow Butyl 265 and Dow Butyl 400, will soon be marketed.

## Gallowhur Releases New Seed Dressings

A new line of organic mercurial seed dressings has been introduced by Gallowhur Chemical Corp. under the trade names Puraseed, Gallowtox and Gallowtox-51.

The Puraseed disinfectant is a combination of a special organic mercury compound and an organic cadmium chemical. Gallowhur reports that the synergistic action between the chemicals increases both effectiveness and safety of the formulation. Puraseed can be used as a slurry or dust and is not volatile. Gallowtox

is a non-volatile liquid and Gallowtox-51 a volatile liquid.

Larvicide Products, Inc. has been named exclusive sales agent to distribute the new products on the West Coast.

## Emulsifiers Permit F-P Mixing in Field

Emcol H-A and H-B, new Emulsol Chemical Corp. products, permit farmers to field mix liquid fertilizers and emulsifiable insecticide concentrates. They can be used with any liquid fertilizers, regardless of NPK sources.

## New Crag Herbicide For Sugar Beets

This year sugar beet growers will be able to use Crag DCU 73W in pre-emergence weed control. The material, developed by Carbide and Carbon Chemicals Co., will not completely eliminate hand weeding of the crop but M. J. Siciliano, sales manager of Crag agricultural chemicals, states that up to \$932 could be saved on the weeding bill for a 100 acre stand.

Announced by Dr. R. T. Nelson, sugar beet technologist of Longmont, Colo., the material will be sold in 50 pound drums and 2½ pound bags at a cost to the farmer of about \$3.33 per acre. E. C. Stone Co., Denver, is distributor in the High Plains area.

Sprayed at planting time on the beet rows, DCU gives protection against foxtail, barnyard grass, wild oats and volunteer oats and barley for two to three months. Known as dichloral urea (1, 3-bis (2, 2, 2-trichloro-1-hydroxethyl) urea, 73 per cent by weight) it is harmless to touch and non-corrosive to equipment. Effectiveness ranges from 80 to 100 per cent.

A combination spray-tiller made by Howry-Berg Steel & Iron Works attaches to any tractor in front of the planter to apply DCU. Selling price will be about \$80 for use with a four row planter.

## Isomal Surfactant By Johnson-March

Isomal 265, a new wetting agent, emulsifier and penetrant from The Johnson-March Corp., is recommended for use in farm sprays and insecticides. A concentrated sulfonated ester type liquid, it is said to have a lower surface tension than similar product and a broader solubility range than ever before possible with a surfactant.

Featuring a "unique" balance of lipophilic and hydrophilic elements, the solution is compatible with both nonionic and other anionic agents. It is stable at high temperatures (to 210°F) and has no upper or lower cloud point. For information

CIRCLE 131 ON SERVICE CARD

## Shur-Green Fertilizer

Continental Fertilizer's new Shur-Green liquid fertilizer will be marketed in the Midwest this spring. A grogun attachment at the top of the attractive quart container attaches to a garden hose and automatically mixes plant food and water in the correct proportion.

## Weedar to Congo

Over 80,000 gallons of Weedar from American Chemical Paint Co. has been shipped to the Belgian Congo for use in a two million dollar campaign to eradicate water hyacinth from the Congo river and its tributaries. It is termed the largest single shipment of weed killer ever exported from this country.

## Moly Added to Nurish

Davison Chemical Co. is now incorporating molybdenum in its Nurish water soluble 20-20-20 plant food. The formulation is packaged in one and three pound polyethylene bags and in 80 pound polyethylene-lined paper bags.



## FDA Tolerances

FDA will adhere strictly to a policy of allowing no tolerances for residues of a pesticide greater than that required by law. Shell Chemical Corp. originally proposed a tolerance of one tenth ppm of endrin in or on cabbage, cottonseed, cucumbers, eggplant, peppers, potatoes, sugar beets, and tops, summer squash and tomatoes. Supporting data, however, showed that when used as directed no amount of endrin would remain in or on the crops at harvest so FDA set the tolerance of zero.

New extensions of tolerance effective dates involving non-seasonal use of several pesticides include: May 1, p-chlorophenyl p-chlorobenzene sulfonate on citrus and for sodium O-phenylphenate on apples; July 22, carbon bisulfide, carbon tetrachloride, ethylene dibromide and ethylene dichloride as grain fumigants, malathion on citrus and MGK 264 in fly sprays.

Tolerances announced by FDA include:

**Hydrogen cyanide.** 25 ppm from post-harvest fumigation of almonds, barley, dried beans, cashews, cocoa beans, corn, peanuts, dried peas, pecans, popcorn, rice, rye, walnuts and wheat.

**Sodium O-phenylphenate.** 10 ppm on oranges, lemons, grapefruit, tangerines, limes, tangelos, citrus citron and kumquats.

**Lindane.** 10 ppm in or on mushrooms.

**Thiram.** 3 ppm in or on apples.

These two petitions have been filed under the Miller bill:

**Copper Carbonate (Basic).** Crown Zellerbach Corp. proposed that this material be exempted from a residue tolerance.

**Diazinon.** Geigy Agricultural Chemicals proposed a tolerance of 3 ppm for residues on apples, cabbage, cherries, celery, pears, prunes, sweet corn and tomatoes.

## USDA Reports on Promising Antibiotics

Five "promising" antibiotics for control of plant diseases are reported by USDA—Anisomycin (Chas. Pfizer & Co.), Mycostatin (Squibb Institute for Medical Research), Oligomycin (discovered at the Univ. of Wisc.), Griseofulvin (Merck & Co. cooperating in development) and Filipin (under development by Upjohn & Co.).

Each protected snap beans and lima beans from one or more of the four fungus diseases against which they were tested in the greenhouse. Oligomycin showed the greatest effectiveness, preventing infection of snap and dry beans with rust and anthracnose and lima beans with downy mildew and stem anthracnose.

## New OM Turf Food

Olin Mathieson's Forward House Div. has introduced a new lawn fertilizer in a brand new package, the Roto-spreader, a long perforated tube which the home owner can roll along his turf.

## Diazinon Suggested For Custom Sprays

Dairy barns can again be serviced by custom spray operations, says Geigy Agricultural Chemicals, because of the proven effectiveness of Diazinon in controlling flies. Farmers are willing to have their barns treated when only two or three sprays are required during the summer.

Discovered and synthesized about five years ago, it was first used for control in Switzerland's Rhone Valley during 1952. This was one of the first areas to report DDT resistant flies. By 1951 fly control could not be obtained there with any residual insecticide but succumbed in Diazinon.

In resistance tests, adult flies from nearly 50 generations have been exposed to sub-lethal deposits of the insecticide but the descendants of these exposed insects require only a somewhat longer exposure to Diazinon residues to be killed than flies whose ancestors had never been exposed.

Both wettable powders and emulsifiable solutions are termed effective, the wettable form generally more effective when surfaces are rough unpainted wood or are very permeable.

Geigy reports that, unless operators are spraying during more than one day a week, special clothing is not required. Custom operators receiving greater exposures, however, should wear water-proof clothing and a respirator.

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# PEST REPORTS

*Presented in cooperation with  
the Economic Insect Survey  
Section, Plant Pest Control  
Branch, Agricultural Research  
Service, USDA.*

## Light Beet Leafhopper Movement

**A**N OUTLOOK statement on beet leafhopper, carrier of curly-top virus disease, has been issued. Although later surveys will be made this spring, the survey recently conducted would indicate that the beet leafhopper movement from the southern breeding grounds to the cultivated districts of north and south-central Utah and western Colorado will be light.

The movement to southern Utah, southern Nevada, southeastern California and central Arizona is also expected to be light. The same situation is true for the local movement from the breeding grounds of northern and eastern Utah to the adjacent cultivated districts of northern Utah and western Colorado.

In the survey conducted earlier this year, it was found that the overwintering beet leafhopper population in the southern breeding area was very small. The spring host plant acreage in this area is greatly reduced over that of the last 10 years. Favorable weather could, of course, reverse these expected conditions but at the present, beet leafhopper and host plants available point to a light movement.

## Truck Crop Pests

The vegetable weevil was perhaps the truck crop insect causing the most concern during February and early March. This insect was causing damage to turnips in Lauderdale county, Mississippi and mustard crops in Orange

county, California, and Washington county, Arkansas. Tobacco bed infestations in Georgia ranged from light in Colquitt and Brooks counties to heavy in Thomas county. The infestations were general throughout the tobacco plant bed area of southern Georgia. Florida also reported the pest from Holmes and Gadsden counties. Cutworms were also active in Florida, attacking several crops in Palm Beach county. Lettuce, sweet corn and field corn were the principal crops hit.

Lettuce in the Lower Rio Grande Valley of Texas was being damaged by the corn earworm. False chinch bugs were also attacking lettuce and damaging turnip leaves in the same area.

## Cutworms Active On La. Strawberries

In one strawberry field in East Baton Rouge parish, cutworms averaged one per plant. Controls were being applied in many strawberry fields in Tangipahoa parish where the cutworms were one per 10 plants.

## Europ. Corn Borer Losses Down in '55

Recently released estimates of damage by the European corn borer to grain corn in the United States in 1955 indicate loss from this insect was not as great in 1955 as in 1954.

The loss for 1955 is estimated to be slightly over 155 million bushels, or approximately 5 per

cent of the total national crop which is estimated at 2,856,767,000 bushels.

The value of the crop lost when computed at December 15, 1955, price level received by farmers is \$182,581,000. This compares with an estimated dollar loss of \$261,415,000 for 1954. The estimates were compiled from 959 counties in 23 states responsible for 83 per cent of the total production of grain corn grown in the United States. They represent 59 per cent of the counties known to be infested.

## Brown Wheat Mite

The brown wheat mite was found to be occurring in all the northwestern and panhandle counties of Oklahoma. Texas county had the highest population reported with counts of over 200 mites per linear foot of row common. There was some spraying in the Altus area.

A survey in southwestern Kansas showed an increase in populations in fall-planted wheat, especially in continuous fields. The heaviest populations were found in Meade, Seward and Stevens counties with many counts averaging between 50 and 75 mites per linear foot of row.

## Winter Grain Mite

In Texas heavy populations of the winter grain mite were reported from Milam, VanZandt, Denton, Collin and Dallas counties. The greenbug was reported to be heavy on oats in Madison county, Texas, and one field of wheat in Castro county had a population of 75 to 125 per linear foot of row.

Damaging numbers were also reported from near Chickasha,

Grady county, Oklahoma. Small numbers of the insect were reported from Ottawa, Canadian, Craig and Kiowa counties of that state. Light populations were found in several Louisiana parishes but parasites and predators were apparently keeping the populations down.

### Virginia Reports on Fruit Pest Outlook

Workers in Virginia have reported on the potential for some of the fruit insects for that state during the coming season. The red-banded leaf roller carry over is heavy in northern Virginia and in Albemarle county apple orchards, but about normal in Augusta county. Although a leaf miner carry over is heavy in apple orchards of the northern area about 75 per cent are parasitized.

Plum curculio populations in peach orchards of the eastern and tidewater area are extremely

high with counts of at least 1,000 per acre in the latter section. Counts were normal in the northern area of the state and light in Albemarle county.

Forbes scale infestations in two apple orchards of Augusta county were found to be heavier than usual. Codling moth potential in the northern area is expected to be about the same as in 1955 but low in Augusta and Albemarle counties. European red mite egg counts were generally heavy in Albemarle county apple orchards, normal in Augusta county and medium in the northern area.

Other mite counts were light in peach orchards of Buckingham county, heavy in apple orchards of Albemarle county and are not expected to be a problem in the northern area before the end of July. In Albemarle county apple orchards, green peach aphids ranged from very light to very heavy with overall rate of about medium. The rosy apple aphid is light in the northern area. ▲

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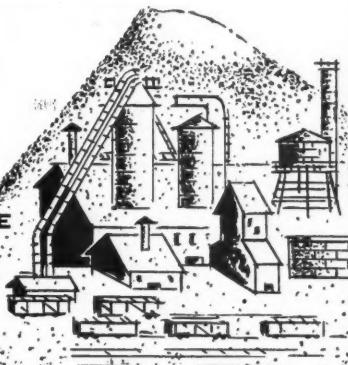
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Specialty: Analysis of Fertilizer Materials and Phosphate Rock. Official Chemists for Florida Hard Rock Phosphate Export Association. Official Weigher and Sampler for the National Cottonseed Products Association at Savannah; also Official Chemists for National Cottonseed Products Association.

115 E. BAYSTREET, SAVANNAH, GA.

## Dictionary of Plant Foods 1955 Edition \$1.00 postpaid

The reference booklet for all who are interested in production and use of chemical fertilizers.

Farm Chemicals, 317 N. Broad St., Phila. 7, Pa.

## MONARCH SPRAYS



This is our Fig. 645 Nozzle. Used for Scrubbing Acid Phosphate Gases. Made for "full" or "hollow" cone in brass and "Everdur." We also make "Non-Clog" Nozzles in Brass and Steel, and

Stoneware Chamber Sprays now used by nearly all chamber spray sulphuric acid plants.

CATALOG 6-C

MONARCH MFG. WORKS, INC.

2501 East Ontario Street, Philadelphia, Pa.

## FEEDING AND FERTILIZER MATERIALS

(SINCE 1898)

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## Specialists in Magnesia for Agriculture

EMJEO (80/82% Magnesium Sulphate)  
Calcined Brucite (fertilizer grade) 65% MgO

### POTNIT

(95% Nitrate of Potash) for  
Special Mixtures and Soluble Fertilizers  
Other Fertilizer Materials

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### Insecticides—

### Fungicides

Mercury Compounds  
for Agricultural Use

### Dithiocarbamates

Ferric—Zinc

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## PIONEER

## PYROPHYLLITE PRODUCERS

—NOW OFFERS—

### "PHYLLITE"

(TRADE NAME)

World's greatest diluent and carrier is non-abrasive, uniform and adheres readily to foliage. It is ground in a Raymond mill—95% through 325 mesh and has a low pH of 5.1. Phyllite is packed in 50 lb. valve bags, 20-ton lots, lowest prices on the west coast, f.o.b. plant.

### "STONE MEAL"

(TRADE NAME)

Contains 16% potash (insoluble). Immediately available in bulk or sacks. Write us for helpful information and generous sample. New Campo, Calif. plant has increased production to 300 tons per day.

### "REDLITE AGGREGATE"

(TRADE NAME)

for aerating soil and amendment, contains 15% iron (insoluble).

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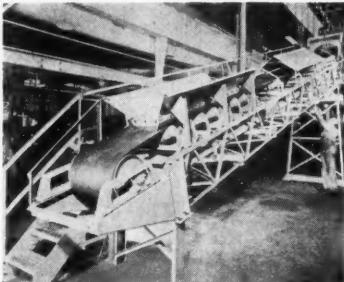
LOS ANGELES PHONE: OLEANDER 5-7417

## Equipment & Supplies

### Link-Belt Develops Sectional Conveyors

Link-Belt now offers Pre-Bilt sectional belt conveyors in standardized, pre-engineered units in capacities ranging up to 1,500 tons per hour. Built in 18, 24, 30 and 36-inch belt widths they have 24 and 42 inch deep trusses and drives to 40 hp.

The conveyors can be mounted on nearly all types of supports and are said to offer a high degree of rigidity and strength per pound of weight. Units are built in one

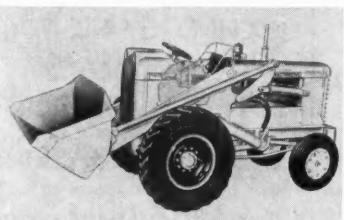


of nine plants nearest the job site and the components are shop-assembled for easy installation. For descriptive information

**Circle 132 on Service Card**

### Tractomotive Adds New TL-11 Loader

Latest addition to the Tractomotive line is the 1 1/8 cu. yd. TL-11 Tracto-Loader featuring a large lifting capacity and good performance in confined areas. The unit also includes front wheel



drive, rear wheel power steering, 3:1 torque convertor and a clutch-type transmission.

The bucket can be tipped to an

angle of 41° at normal three foot carrying height and, at ground level, it can be tipped back 22°. Overall length with bucket in the carrying position is 15'4" and in this position the TL-11 can turn in a radius of 12'3". For more information

**Circle 133 on Service Card**

### A & S Seeks Patent On Zip-Top Device

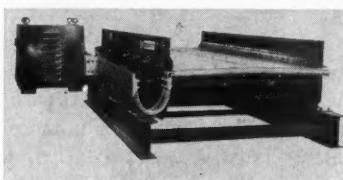
Arkell & Smiths has applied for patents on its Zip-Top multiwall bag opening device. When adapted to standard A&S sewn valve or sewn open mouth bags, it permits easy opening with one sharp pull of the tab.

The feature is available without additional charge. For more information

**Circle 134 on Service Card**

### Simplicity Eng. SS Heated Screen Unit

A new Simplicity Engineering heated screen, the 4' x 8' Model SS, is termed ideal for handling



damp or sticky materials. It has 35 sq. ft. of available screening surface and offers a high speed, short stroke assembly for positive action in distributing vibration equally over the entire deck area.

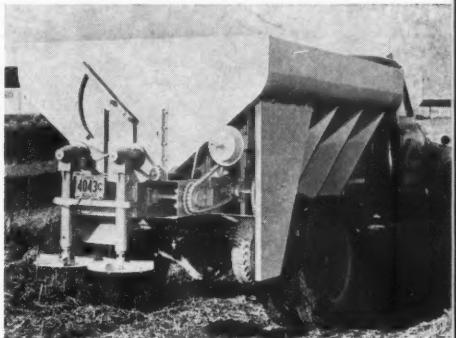
Current is applied end to end for higher resistance, even heat distribution and lower operating current. There is no inductance heating of side plates. The transformer is a dust tight unit and includes a built-in overload switch. For more data

**Circle 135 on Service Card**

### New K-5 Spreaders By Baughman Mfg.

A new line of lime and fertilizer bodies, the K-5 series, produced by Baughman Mfg., offers professional spreaders top flexibility with a choice of conveyors and a selection of drives.

Drag chain, chain belt or belt conveyors are available along



with three types of drives—PD-GC, PD-PC and HD-GC. All but the chain belt model can be obtained in either double or single distributor.

The rugged body features reinforced top edge, welded external jacks and welded internal bracing. Models are listed as low as \$700 f.o.b. the factory. For more information

**Circle 136 on Service Card**

### USDC Report on Repair of Pallets

If your shipping room has been converted to palletized operation a US Dept. of Commerce report will be of interest. Prepared by the Navy, it reviews the most economical methods of repairing wooden pallets including the 48" x 72" stevedore pallet and 48" x 48" and 40" x 48" pallets, both block and four stringer types.

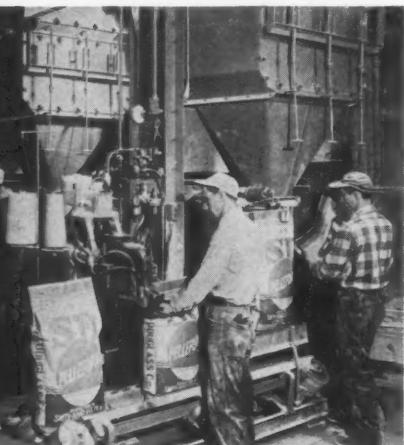
Also included are methods of adapting block and stringer types for use with straddle type fork trucks.

Send a dollar to the Office of Technical Services, US Dept. of Commerce, Washington 25. Ask for PB 111755, Pallet Repair Manual.

## Bemis Adds New Fertilizer Packer

New standards for speed and weight accuracy are claimed for Bemis Bro. Bag's new fertilizer packer. It holds consistently to weight tolerances of four ounces plus or minus on 50 to 100 lb. units.

A complete packaging unit with production rate of 16 to 18



Two Bemis packers installed at the Smith-Douglass Streator, Ill., plant.

eighty pound bags per minute, it will handle all types of sewn open-mouth paper and textile bags in size ranges of 50-100 and 100-200 lbs.

Features include three-bucket scale design, Taper-Grip bag holder, electric bag releasing device and a Vee-Slat conveyor providing delivery to closing equipment.

For insecticide treatment at time of packing, an optional Jetrol injector is available. Any

hazard is confined at the point of bagging and the injector gives close quantity control, both by volume and weight.

Circle 137 on Service Card

## Rotary Feeder from B-B in two Models

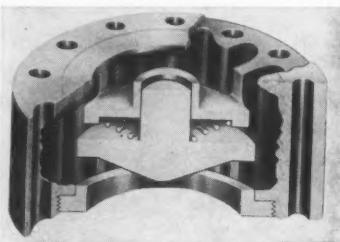
Two models of a newly designed rotary feeder are available from Beaumont Birch, both in sizes from four to 12 inches and with eight pockets and outboard bearings of sleeve or anti-friction type.

A standard model handles plus or minus pressures to 3½ psi and the peripheral seal type is designed for pressures to 10 psi. The latter has a self adjusting Teflon seal. For data

Circle 138 on Service Card

## Valve for Control of Water Hammer

Williams Gauge is now producing a simplified flanged silent check valve for control of water hammer in all types of hot or cold



liquid service. Available in various sizes, it can be furnished with special flange facings. For more details

Circle 139 on Service Card

## Lightweight Mech. Vibrator Available

The bantam-sized Vibrolator SAH-10 is said to be the lightest full-powered mechanical vibrator available. Developed by Martin Engineering, it is designed for use on hoppers, feeders, packaging machines, etc.

Frequency of vibration can be varied from zero to over 50,000



CPM and operating pressure from five to 150 psi. It operates on steam or air. For a catalog describing this and other Vibrolators

Circle 140 on Service Card

## Hoffer Soil Sampler

Features of the Hoffer Soil Sampler include a probe cup with heat treated cutting tip that resists blunting, bending or twisting and open-side construction for accurate on-the-spot analysis.

It cuts a soil core slightly smaller than the tube itself, permitting the core to rise without breaking. Surface of the entire tool is chrome plated to resist corrosion. For complete information

Circle 141 on Service Card

**POTASH  
SUPERPHOSPHATE  
UREA, 45½% & 46% N.  
DI-N-CAL—20.5% N.  
(Calcium Ammonium Nitrate)  
BAGS—  
Paper and Burlap**

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Brokers

Fertilizer Materials

Industrial Chemicals

P. O. BOX 155 Ph. 3-4828-29  
CHARLESTON, S. C.

"Since 1915 your most efficient channel for sales and purchases of Fertilizer Materials"

**CHI-ORGANIC  
(Chicago Activated Sludge)  
HYNITE TANKAGE  
CASTOR POMACE  
GROUND  
COTTON-BUR ASH  
(38-40% K<sub>2</sub>O Potash)**

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### NEW RATES . . .

Help wanted, positions wanted, used machinery and business opportunities are now charged at only 10 cents per word, \$2.00 minimum. Count box number as five words.

Display ads . . . \$15.00 per column inch, minimum of one

inch. Ads over the minimum are accepted only in multiples of one half inch.

For prompt results, send your classified ads to Farm Chemicals, 317 N. Broad St., Philadelphia 7, Pa.

Closing date: 10th of preceding month

## Suppliers' Briefs

**Arkell & Smiths.** William H. Liebtrau will supervise direct sales activities in the Southern Div. territory.

**Clark Equipment Co.** Mainline Equipt. Co., Des Moines, Merts Equipment Co., Albany, Ga., and R. A. Young & Son, Ft. Smith, Ark., have been appointed to sell and service the Michigan line, products of the Construction Machinery Div.

**George H. Fry Co.** Appointment of William Nicosia Advertising, Inc., is announced.

**Fulton Bag & Cotton Mills** recent appointments:

GENERAL OFFICE, BAG DIV. W. W. Plumb, to director of manufacturing; J. A. Banda, director of export sales; F. C. Sivori, director of canvas sales and H. H. Rogers, in charge of industrial engineering.

BAG DIV. Rene F. Augay to director of bag materials purchases.

Fulton has named Warren A. Finberg sales representative.

**International Paper Co.** J. L. Hollis named mill agent of the Bastrop, La., Bagpak plant.

**Link-Belt Co.** Last month, executive offices in Chicago were moved to the Prudential Plaza, Chicago 1, Ill.

**POSITION DESIRED:** AGRONOMIST interested in responsible development or technical services position. Excellent background in plant nutrition, soils and fertilizer research and application. Strong in public relations; liaison with experiment stations; evaluation of research. Creative, energetic, ability as organizer and manager, assume responsibility. Farm background. Box 530, c/o FARM CHEMICALS.

**Raymond Bag Corp.**, Div. of Albermarle Paper Mfg. Co. Formation of this firm has just been announced, combining the manufacturing facilities of Raymond Bag Co. with those of the Multiwall Bag Div. of Albermarle. The firm's officers include F. D. Gottwald, board chairman; C. L. Mers, pres.; J. H. Lawrence, vice-pres.—mfg.; J. R. Clements, vice-pres.—sales; W. G. Shaw, treas. and C. C. Mers, sec'y.

**St. Regis Paper Co.** Appointment of Frank D. Instone as assistant sales manager of packaging equipment, Multiwall Packaging Div., is announced. Also reported was retirement of Willard J. Dixon, vice president, on March 1.

**Simplicity Engineering.** Plant expansion of 50,000 square feet—50 per cent of its present floor space, is planned by the firm.

**Union Bag & Paper Corp.** Former field sales manager J. J. Patterson Jr., has been named director, multiwall bag sales.

## NATIONAL CAL-MAG OXIDES —



**MgO 40.39  
CaO 58.07  
TNP 203.88**

**Superior for Dehydrating, Neutralizing, and Curing factors in the preparation of effective fertilizers.**

## PROMPT SHIPMENTS

**Three railroads serve our Carey, Ohio, plant — assuring prompt delivery—everywhere.**

**We Also Produce**  
DOLOMATIC  
HYDRATED  
LIME (165 TNP)  
and  
KILN DRIED  
RAW DOLOMITE  
(107 TNP)  
Screened to size

**Write FOR COMPLETE INFORMATION TODAY—Dept. FC**

**The NATIONAL LIME and STONE CO.**  
General Offices  
FINDLAY, OHIO

# Fertilizer Materials Market

## New York

March 12, 1956

**Sulfate of Ammonia.** While no price changes were announced and there was some inquiry in the market for export, stocks continued to pile up at production points. It was hoped the Government would soon come into the market again to export some sulfate of ammonia to friendly countries.

**Urea.** Domestic producers continued to dominate this market with very little imported urea arriving in this country.

**Nitrogenous Tankage.** Demand was poor at the present time for nitrogenous tankage and most producers were anxious to move their surplus stocks before the end of the current shipping season. Prices ranged from \$3.75 to \$4.50 per unit of ammonia (\$4.56 to \$5.47 per unit N), f.o.b. production points.

**Castor Pomace.** Some movement was reported in this material, and stocks on hand were limited due to the present small production. Prices remained firm at \$40 per ton, f.o.b. production points.

**Organics.** Most buyers still hesitated to enter the organic fertilizer market until they had a better picture of how much fertilizer would be moved this spring, with the result that most markets remained dull and a little bit lower in price. Tankage sold at \$4 per unit of ammonia (\$4.86 per unit N) f.o.b. eastern points and blood at \$4.75 (\$5.71 per unit N) f.o.b. New York.

**Fish Meal.** Because fishing operations on the North Atlantic Coast are still a couple of months away, fish meal was slightly firmer in price and was selling at about \$140 per ton. Several large lots of imported fish meal were said

to be available at prices slightly under this figure.

**Bone Meal.** While a small pickup was noted from the feed trade for feeding bone meal, fertilizer buyers were buying from hand to mouth but the price held steady at \$65 per ton, f.o.b. production points, for both grades. Some imported feeding bone meal was reported sold at Southern ports at \$70 per ton.

**Hoof Meal.** A steady market was maintained in hoof meal and offerings were pretty well cleaned up at last sales prices of \$6.25 per unit of ammonia (\$7.59 per unit N), f.o.b. Chicago.

**Feather Meal.** Feed buyers have recently bid the price of this material up to a level where it is not so attractive to fertilizer buyers. Last sales were made on the basis of \$4.75 per unit of ammonia (\$5.71 per unit N), f.o.b. production points in the East.

**Superphosphate.** Some limited export demand was reported on triple superphosphate, but domestic demand was only fair and most producers were hoping to cut down existing stocks in the next sixty days. No price changes were reported.

**Potash.** Most producers said shipments were running behind last year but expected some increase in the next 30 days. Many buyers are not able to take additional material into their plants because of lack of storage space.

## Philadelphia

March 12, 1956

There is much less activity in raw materials than is usual at this time of the year. The large stocks on hand and poor weather have something to do with this. It seems also that farmers are hoping for something favorable in the way of legislation. Stocks of inorganic nitrogen are large

and facilities for further production are reportedly being increased in several parts of the country. Fish scrap and meal have enjoyed renewed activity recently. Blood and tankage are looking up a little, and potash is moving somewhat better. It is expected the consumption of mixed fertilizer this season will fall below 1954-1955 tonnage.

**Sulfate of Ammonia.** Production is reported increasing and there are ample stocks on hand, but the demand is not too eager.

**Nitrate of Ammonia.** Movement is reported fair, particularly in the South. Production continues large, but prices remain per schedule.

**Nitrate of Soda.** Demand is reported somewhat improved.

**Blood, Tankage, Bone.** Blood is up to \$5 (\$6.08 per unit N) in the West, and \$4.75 (\$5.71 per unit N) New York area. Tankage is also \$5 (\$6.08 per unit N) in the West, but \$4 to \$4.25 (\$4.86 to \$5.16 per unit N) in this area in the East. Bone meal is more or less nominal at \$65 to \$70 per ton.

**Castor Pomace.** Limited quantity is moving at \$40 per ton.

**Fish Scrap.** The demand has picked up materially and scrap is reported in short supply. Meal is priced at \$141 per ton and scrap at \$137.

**Phosphate Rock.** Stocks are not considered burdensome, but supply is ahead of demand and movement not too attractive.

**Superphosphate.** Situation is said to be in fairly good shape, with preference shown for triple grade.

**Potash.** Position is reported disappointing, with stocks moving out slowly, and it is feared that when the usual spring orders start coming in, the box-car supply will be inadequate.

# Statistics

## Output of Copper Sulfate Up in 1955

Last year copper sulfate production rose 20 per cent over 1954 reversing a two year downtrend. Shipments increased 19 per cent and were 1,000 tons in excess of production while inventories dropped 12 per cent below January 1 stocks.

Production for the year was 78,088 gross tons containing 19,522 tons of copper. Agricultural shipments of 18,144 tons represented 23 per cent of the total, three per cent less than in 1954.

## Dec. Super Output Continues to Gain

Superphosphate output, shipments and stocks were well ahead of the 1954 monthly figures. Production (100 per cent APA) totaled 230,676 tons, up 7 per cent from December and 12 per cent above December, 1954; shipments were 122,122,520 tons, down 10 per cent and up 13 per

cent respectively; and stocks on hand at the end of the month were 15 per cent higher than those held on December 31, 1954 and 13 per cent above quantities on hand as of November 30, 1955.

## Report Shows Clay Usage Data for '54

Clay production increased two per cent in 1954 according to the Bureau of Mines. Materials used in manufacturing insecticides and fungicides include kaolin, 28,969 tons; fuller's earth, 71,244 tons; bentonite, 2,581 tons and over 4,000 tons of other types. The bureau also reported use of 12,608 tons of kaolin, 270 tons of fuller's earth and 2,182 tons of other clays in fertilizer production.

## State Fertilizer Tonnage Reports

Plant food tonnage in California during the last quarter of 1955 gained over the corresponding 1954 period, 188,204 tons compared to 176,395 tons. Dry mixed goods accounted for 33,994 tons

in 1955, 34,224 the previous year.

Tonnages of agricultural minerals were off during the period dropping from 240,205 tons in the 1954 quarter to 211,372 tons.

Missouri's agricultural experiment station reports sales of 771,556 tons of fertilizer in 1955, including 449,871 tons of mixed goods, 109,270 tons of materials and 212,415 tons of rock phosphate. Only rock phosphate showed an increase for the year and the total represents a slight drop of 180 tons from 1954.

A decrease of 2.7 per cent in fertilizer tonnage from 1954 figures is reported by Wisconsin's W. B. Griem. The total of 422,044 tons for 1955 includes 311,175 tons of complete mixed goods, 79,369 tons of phosphate and potash mixtures, 3,141 tons of superphosphate and 28,359 tons of other materials.

Mixed goods and miscellaneous materials declined slightly while the other two categories showed modest gains.

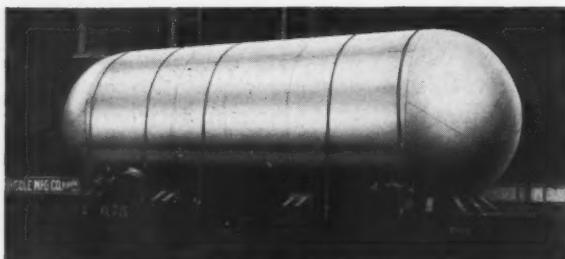
## Production — December, 1955

with preliminary 1955 totals

Compiled from Government Sources

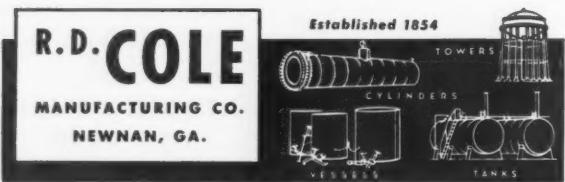
Chemical	Unit	December 1955	December 1954	November 1955	Prelim- inary 1955 Totals
Ammonia, synth. anhydrous.....	s. tons	272,748	253,687	*268,859	.....
Ammonia liquor, coal & coke (NH <sub>3</sub> content). (Including diamm. phosphate & ammon. thiocyanate)	pounds	3,893,664	3,309,100	4,178,738	45,634,906
Ammonium nitrate, fert. grade (100% NH <sub>4</sub> NO <sub>3</sub> ).....	s. tons	167,675	163,213	153,595	.....
Ammonium sulfate synthetic (technical).....	s. tons	104,457	94,620	*92,285	.....
coke oven by-product.....	pounds	167,386,683	155,075,100	160,841,189	1,939,114,500
BHC (Hexachlorocyclohexane).....	pounds	4,892,565	1,957,101	3,477,570	.....
Gamma content.....	pounds	902,239	343,529	628,392	.....
Copper Sulfate (gross).....	s. tons	.....	4,632	.....	78,088
DDT.....	pounds	10,991,192	6,036,611	10,310,389	.....
2,4-D Acid.....	pounds	2,402,896	3,396,364	2,932,820	.....
esters and salts.....	pounds	1,446,619	1,082,316	2,530,132	.....
esters and salts (acid equiv.).....	pounds	1,179,766	881,539	1,819,501	.....
Phosphoric acid (50% H <sub>3</sub> PO <sub>4</sub> ).....	s. tons	304,081	264,317	298,313	.....
Sulfur, Native (Frasch).....	l. tons	574,144	477,909	537,461	5,743,344
Recovered.....	l. tons	35,750	32,200	35,000	401,650
Sulfuric acid, gross (100% H <sub>2</sub> SO <sub>4</sub> ).....	s. tons	1,468,409	1,299,530	*1,417,701	.....
Chamber Process (100% H <sub>2</sub> SO <sub>4</sub> ).....	s. tons	232,106	235,961	210,807	.....
Contact Process (100% H <sub>2</sub> SO <sub>4</sub> ).....	s. tons	1,236,303	1,063,569	*1,206,894	.....
Superphosphate (100% APA).....	s. tons	230,676	206,309	216,247	2,310,306
Normal (100% APA).....	s. tons	154,558	151,115	147,325	1,556,880
Enriched (100% APA).....	s. tons	2,571	4,331	1,953	39,042
Concentrated (100% APA).....	s. tons	72,707	49,665	66,025	706,584
Wet Base (100% APA).....	s. tons	840	1,198	944	7,800

\* Revised



ALUMINUM TANKS

**"Cole" can furnish your requirements in tanks of Steel, Aluminum and Stainless-Steel.**



easier handling • dependable

**TRIGGER ACTION**

**GunJet** SPRAY GUNS

No. 42 Series

for orchard, livestock and spot spraying

Extra-long "four finger" trigger for comfort, adjustable trigger stop to set desired spray pattern, and trigger lock for continuous spraying are a few of the advanced GunJet No. 42 features. A top quality gun for pressures up to 800 pounds. Full choice of types and capacities with hardened stainless steel tips for maximum wear resistance. Made in brass and aluminum.

for complete information write for free Bulletin 80.

SPRAYING SYSTEMS COMPANY 3280 Randolph Street Bellwood, Illinois



## New Midland Lab Opened by Dow

ON MARCH 7, Dow Chemical Company officially opened its new \$1.1 million biochemistry laboratory building at Midland, Mich. Presently housing 64 members of the biological research department, it is designed to provide equipment and working space for about 90 persons.

Windows in the building have been omitted except in the lobby. This, says Dr. Don D. Irish, biochemical research director, is to assist in obtaining better control of temperature, light and ventilation.

Objectives of his department include the study of safe handling and use of chemicals through investigation of proposed chemical products and processes, discovery and development of new products and basic and exploratory research.

Covering roughly the area of a football field, the building is a single story, air-conditioned structure divided into 60 rooms that provide a total space of about 40,000 square feet. Uniform lighting is provided by banks of fluorescent tubes and stable temperatures are maintained by the complete air-conditioning system.

Included in the facilities are eight animal rooms providing capacity for caging some 15,000 rats, 1,500 mice, 1,000 rabbits, 1,300 guinea pigs, 25 monkeys in addition to other species as needed.

Erected in 14 months by the Collinson Construction Company, the building was designed by architect Alden B. Dow, a son of the chemical firm's founder. ▲



Established in 1834

All Steel Self Contained  
Fertilizer Mixing and Bag-  
ging Units

Complete Granulating  
Plants

Batch Mixers—Dry Batch-  
ing—Pan Mixers—Wet  
Mixing

Tailings Pulverizers—Swing  
Hammer and Cage Type

Dust Weigh Hoppers

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Belt Conveyors—Stationary  
and Shuttle Types

Batching Systems

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**STEDMAN FOUNDRY & MACHINE COMPANY, INC.**  
Subsidiary of United Engineering and Foundry Company  
General Office & Works: AURORA, INDIANA

**QUICKEST SALES!**  
**HIGHEST PROFITS!**

**FERTI-LIQUID**  
Trade Mark Reg. THE ALL PURPOSE Patent Pending  
**LIQUID FERTILIZER**

Complete with Penetrating Agent — Trace Elements —  
Plant Growth Stimulant

NEW ADVANCED 10-20-10  
FORMULA — 40% NUTRIENTS

OTHER FERTI-LIQUID FEATURES:

- Non-corrosive — use safely with any type spray (tractor, jet, boom, or aerial) . . . ties-in with insecticidal, fungicidal, herbicidal spray programs
- Unexcelled for leaf feeding — seed treating — transplanting
- Follows the recommended 1-2-1 Nutrient Ratio
- Most economical on a Plant Food (Nutrient) basis

**185**  
per gal.  
del. in  
5-gal.  
drums

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## Alphabetical List of Advertisers

American Agricultural Chemical Co., New York City	54
American Potash & Chemical Corp., Los Angeles, Calif.	13
Armour Fertilizer Works, Atlanta, Ga.	55
Ashcraft-Wilkinson Co., Atlanta, Ga.	19, 35, 55
Atkins, Kroll & Co., San Francisco, Cal.	10
H. J. Baker & Bro., New York City	—
Baughman Mfg. Co., Jerseyville, Ill.	4, 5
Berkshire Chemicals, Inc., New York City	58
Bradley & Baker, New York City	22
Bradley Pulverizer Co., Allentown, Pa.	—
Burlap Council, New York City	41
Chase Bag Co., Chicago, Ill.	—
Clark Equip. Co., Benton Harbor, Mich.	18
Clover Chemical Co., Pittsburgh, Pa.	65
E. D. Coddington Mfg. Co., Milwaukee, Wis.	—
Cole, R. D. Mfg. Co., Newman, Ga.	64
Commercial Solvents Corporation, New York City	39
Crowley Tar Products Co., New York City	—
Davison Chemical Co., division of W. R. Grace & Co., Baltimore, Md.	—
Duval Sulphur & Potash Co., Houston, Tex.	19
Edwards Laboratory, Norwalk, Ohio	—
Escambia Bay Chemical Corp., Pensacola, Fla.	35
Exact Weight Scale Co., Columbus, Ohio	29
Finco, Inc., North Aurora, Ill.	41
Geigy Agricultural Chemicals, New York City	42
Grand River Chem. Div., Deere & Co., Tulsa, Okla.	24
Hammond Bag & Paper Co., Inc., Wellsburg, W. Va.	—
Highway Equipment Co., Cedar Rapids, Ia.	—
Hough, The Frank G. Co., Libertyville, Ill.	3
Indian Jute Mills Association, New York City	41
International Minerals & Chemicals Corp., Chicago, Ill.	—
Spec. Prod., Phosphate Chemicals Div.	11
Phosphate Minerals Div.	—
Potash Div.	Second Cover
Jackle, Frank R., New York City	54
Keim, Samuel D., Philadelphia, Pa.	58
Kraft Bag Corporation, New York City	—
Link-Belt Co., Chicago, Ill.	—
Lion Oil Company, El Dorado, Ark.	14
Ludlow-Saylor Wire Cloth Co., St. Louis, Mo.	30
Alex M. McIver & Son, Charleston, S. C.	60
Mississippi River Chem. Corp., St. Louis, Mo.	—
Munson Mill Machinery Co., Utica, N. Y.	—
Monarch Mfg. Works, Inc., Philadelphia, Pa.	58
National Lime & Stone Co., Findlay, Ohio	61
National Potash Co., New York City	15
Nitro-Form Agricultural Chemicals, Woonsocket, R. I.	—
Nitrogen Division, Allied Chemical & Dye Corp., New York City	Back Cover
Pennsylvania Salt Mfg. Co. of Wash., Tacoma, Wash.	21
Phelps-Dodge Refining Corp., New York City	17
Phillips Chemical Co., Bartlesville, Okla.	36
Pioneer Pyrophyllite Producer, Beverly Hills, Calif.	58
Potash Co. of America, Washington, D. C.	Third Cover
Poulson Co., Los Angeles, Calif.	—
Schmutz Mfg. Co., Louisville, Ky.	32
Shell Chemical Corporation, Denver, Colo.	1
Shuey & Company, Inc., Savannah, Ga.	58
Sinclair Chemicals, Inc., New York City	40
Sohio Chemical Co., Lima, Ohio	27
Spraying Systems Co., Bellwood, Ill.	64
Stedman Foundry and Machine Co., Inc., Aurora, Ind.	65
Sturtevant Mill Co., Boston, Mass.	7
Stephens-Adamson Mfg. Co., Aurora, Ill.	—
Tennessee Corporation, Atlanta, Ga.	25
Texas Gulf Sulphur Co., New York City	—
Tractomotive Corp., Deerfield, Ill.	—
Union Bag & Paper Corp., New York City	9
U.S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.	22
United States Potash Co., New York City	6
Woodward & Dickerson, Inc., Philadelphia, Pa.	57

## **editorial**

**R**ESPONSIBLE members of the industry will certainly find themselves in agreement with the comments of W. W. Allen and FDA Commissioner Lerrick on safe use of pesticides. In addressing the NAC meeting, both stressed the need for establishing a sound, aggressive, continuing policy—one aimed at assuring the safe use of these materials.

NAC's six point program will boost this policy. Where properly utilized, the kits being distributed to member companies should assist in making the grower more aware of the need for following label directions.

Backing up such promotional activity, basic producers and various government agencies work constantly on toxicity problems, helping to assure factual labeling and directions for use. Some companies have attempted individual efforts in publicizing safety with pesticides with varying degrees of success.

All of this activity is aimed primarily at informing the grower and it is of prime importance. But it must also be recognized that the success of such efforts is also dependent on the knowledge and attitude of company personnel and those in related fields, including extension workers, experiment station personnel, dealers, distributors and custom operators.

In one conversation at Hollywood Beach it was pointed out that of all the groups concerned with this problem, the sales portion appears to be receiving the least safety attention. Naturally, salesmen are primarily interested in volume. But they must also be aware of the vital necessity for proper use of their products from a standpoint of both safety and future business.

Certainly, factually trained and capable field men have been the backbone of many of our more successful formulators. Their knowledge, ability and farm contacts make them logical salesmen of not only pesticide chemicals but of proper usage and label awareness.

To help assure the success of this vital program, take enough time to be certain your salesmen, distributors and dealers are aware of the importance of actively selling pesticide safety to their customers. It could pay big dividends—increased sales, satisfied customers, good public relations and if effective, might serve as a deterrent to added restrictive legislation.

**W**ITH farm surpluses a constant headache it was interesting to read of a measure proposed by Senator Homer Capehart and supported by 33 other members of the Senate. The group is pushing a bill on utilization of agricultural commodities in a "crash program," an approach termed the only real solution to the surplus problem.

This measure isn't given much chance of enactment but despite this and the obvious political implications of a bill introduced by a single party, it does represent a positive approach to a problem that directly affects this industry.

The senators are requesting appropriation of some \$100 million a year to support a new Industrial Agricultural Products Administration that would be charged with uncovering new markets and expanding present outlets for farm commodities. It would have not only the authority to engage in research and development but also to produce materials on a commercial scale to prove their feasibility.

The cost does not seem high when compared to that of our present surplus burden, it is less than a third of the cost of storing these commodities. Such an approach with its impact on farm productivity and income, as well as on new industries and on-farm sales, could be a big factor in establishing a new base for our agricultural plant.

According to Capehart, our agricultural research agencies could, given the opportunity, find industrial uses for five billion additional bushels of grains, corn and potatoes each year. Possibilities include the use of grain alcohol with gasoline in motor fuels, vegetable oils for paints, production of rubber, new drug plants, building materials, starch in paper, high protein food and other developments.

He pointed to the industrial chemical and oil industries as examples of the impact of research on commercial and industrial development.

Short term efforts are vital to our customers at the present time but there must be more than a year-to-year approach to this gigantic problem. Certainly basic and applied research into the utilization of agricultural commodities is worthy of the "crash" designation.

G. P. T., JR.

*Editor*

**FARM CHEMICALS**

# Buyers' Guide

## Classified Index to Advertisers in 'Farm Chemicals'

### ALDRIN

Ashcraft-Wilkinson Co., Atlanta, Ga.  
Shell Chemical Co., Agr. Chem. Div., N.Y.C.

### AMMONIA—Anhydrous and Liquor

Ashcraft-Wilkinson Co., Atlanta, Ga.  
Commercial Solvents Corporation, New York City  
Escambia Bay Chem. Corp., Pensacola, Fla.  
Grand River Chem. Div., Deere & Co., Tulsa, Okla.  
Lion Oil Co., El Dorado, Ark.  
Mississippi River Chem. Co., St. Louis, Mo.  
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.  
Phillips Chemical Co., Bartlesville, Okla.  
Sinclair Chemicals, Hammond, Ind.  
Sohio Chemical Co., Lima, O.

### AMMONIUM NITRATE

Ashcraft-Wilkinson Co., Atlanta, Ga.  
Commercial Solvents Corporation, New York City  
Escambia Bay Chem. Corp., Pensacola, Fla.  
Lion Oil Co., El Dorado, Ark.  
Mississippi River Chem. Co., St. Louis, Mo.  
Phillips Chemical Co., Bartlesville, Okla.

### AMMONIUM SULFATE

See Sulfate of Ammonia

### AMMONIUM SULFATE NITRATE

Atkins, Kroll & Co., San Francisco, Calif.

### BAGS—BURLAP

Chase Bag Co., Chicago, Ill.

### BAGS—COTTON

Chase Bag Co., Chicago, Ill.

### BAGS—Multiwall-Paper

Chase Bag Co., Chicago, Ill.  
Kraft Bag Corporation, New York City  
Union Bag & Paper Corp., New York City

### BAGS—Dealers and Brokers

Ashcraft-Wilkinson Co., Atlanta, Ga.  
McIver & Son, Alex. M., Charleston, S.C.

### BAG PRINTING MACHINES

Schmutz Mfg., Louisville, Ky.

### BAG FILLING MACHINES

E. D. Coddington Mfg. Co., Milwaukee, Wis.  
Stedman Foundry and Machine Co., Aurora, Ind.  
Union Bag & Paper Corp., New York City

### BHC AND LINDANE

Ashcraft-Wilkinson Co., Atlanta, Ga.  
Pennsylvania Salt Mfg. Co., of Wash., Tacoma, Wash.

### BIN LEVEL CONTROLS

Stephens-Adamson Mfg. Co., Aurora, Ill.

### BIN DISCHARGERS

Stephens-Adamson Mfg. Co., Aurora, Ill.

### BONE PRODUCTS

American Agricultural Chemical Co., N.Y.C.  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Jackie, Frank R., New York City  
Woodward & Dickerson, Inc., Philadelphia, Pa.

### BORAX AND BORIC ACID

American Potash & Chemical Corp., Los Angeles, Calif.

Woodward & Dickerson, Inc., Philadelphia, Pa.

### BOX CAR LOADERS

Stephens-Adamson Mfg. Co., Aurora, Ill.

### BROKERS

Ashcraft-Wilkinson Co., Atlanta, Ga.  
Bradley & Baker, N.Y.C.  
Jackie, Frank R., New York City  
Keim, Samuel D., Philadelphia, Pa.  
McIver & Son, Alex. M., Charleston, S.C.  
Woodward & Dickerson, Inc., Philadelphia, Pa.

### BULK TRANSPORTS

Baughman Mfg. Co., Jerseyville, Ill.  
Highway Equipment Co., Cedar Rapids, Ia.

### CALCIUM AMMONIUM NITRATE

Atkins, Kroll & Co., San Francisco, Calif.  
McIver & Son, Alex. M., Charleston, S.C.

### CALCIUM ARSENATE

American Agricultural Chemical Co., N.Y.C.

### CALCIUM NITRATE

Atkins, Kroll & Co., San Francisco, Calif.

### CAR PULLERS

Stephens-Adamson Mfg. Co., Aurora, Ill.

### CARS AND CART

Stedman Foundry and Machine Co., Aurora, Ind.

### CASTOR POMACE

Ashcraft-Wilkinson Co., Atlanta, Ga.  
McIver & Son, Alex. M., Charleston, S.C.

### CHEMISTS AND ASSAYERS

Shuey & Co., Inc., Savannah, Ga.

### CHLOROBENZILATE

Geigy Agr. Chems. Div. Geigy Chem. Corp., N.Y.C.

### CHLORDANE

Ashcraft-Wilkinson Co., Atlanta, Ga.

### CLAY

Ashcraft-Wilkinson Co., Atlanta, Ga.

### CONDITIONERS

Ashcraft-Wilkinson Co., Atlanta, Ga.  
H. J. Baker & Bro., New York City

Jackie, Frank R., New York City

Keim, Samuel D., Philadelphia, Pa.

McIver & Son, Alex. M., Charleston, S.C.

National Lime & Stone Co., Findlay, Ohio

### CONVEYORS

Baughman Mfg. Co., Jerseyville, Ill.

Link-Belt Co., Chicago, Ill.

Stedman Foundry and Machine Co., Aurora, Ind.

Stephens-Adamson Mfg. Co., Aurora, Ill.

Sturtevant Mill Co., Boston, Mass.

### COPPER SULFATE

Phelps-Dodge Refining Corp., New York City

Tennessee Corp., Atlanta, Ga.

### COTTONSEED PRODUCTS

Ashcraft-Wilkinson Co., Atlanta, Ga.

Bradley & Baker, N.Y.C.

Jackie, Frank R., New York City

Woodward & Dickerson, Inc., Philadelphia, Pa.

### DDT

Ashcraft-Wilkinson Co., Atlanta, Ga.

### DIAZINON

Geigy Agr. Chems. Geigy Chem. Corp., N.Y.C.

### DIELDRIN

Ashcraft-Wilkinson Co., Atlanta, Ga.

Shell Chem. Corp., Agr. Chem. Div., N.Y.C.

### DILUENTS

Ashcraft-Wilkinson Co., Atlanta, Ga.

Pioneer Pyrophyllite Producers, Beverly Hills, Calif.

### DITHIOCARBAMATES

Berkshire Chemicals, New York City

### ELEVATORS

Link-Belt Co., Chicago, Ill.

Stedman Foundry and Machine Co., Aurora, Ind.

Stephens-Adamson Mfg. Co., Aurora, Ill.

### ENDRIN

Shell Chem. Corp., Agr. Chem. Div., N.Y.C.

### ENGINEERS—Chemical and Industrial

Stedman Foundry and Machine Co., Aurora, Ind.

Sturtevant Mill Co., Boston, Mass.

### FERTILIZER—Liquid

Clover Chemical Co., Pittsburgh, Pa.

### FERTILIZER—Mixed

American Agricultural Chemical Co., N.Y.C.

Armour Fertilizer Works, Atlanta, Ga.

Davison Chemical Co., div. of W.R. Grace & Co., Baltimore, Md.

International Min. & Chem. Corp., Chicago, Ill.

### FILLERS

Bradley & Baker, N.Y.C.

### FISH SCRAP AND OIL

Ashcraft-Wilkinson Co., Atlanta, Ga.

Bradley & Baker, N.Y.C.

Jackie, Frank R., New York City

Woodward & Dickerson, Inc., Philadelphia, Pa.

### FULLER'S EARTH

Ashcraft-Wilkinson Co., Atlanta, Ga.

### FUNGICIDES

American Agricultural Chemical Co., N.Y.C.

Berkshire Chemicals, New York City

Tennessee Corp., Atlanta, Ga.

### HERBICIDES

American Potash & Chemical Corp., Los Angeles, Calif.

Lion Oil Company, El Dorado, Ark.

### HERBICIDES—Oils

Lion Oil Company, El Dorado, Ark.

### HOPPERS & SPOUTS

Stedman Foundry and Machine Co., Aurora, Ind.

Sturtevant Mill Co., Boston, Mass.

### IMPORTERS, EXPORTERS

Armour Fertilizer Works, Atlanta, Ga.

Ashcraft-Wilkinson Co., Atlanta, Ga.

Berkshire Chemicals, New York City

Woodward & Dickerson, Inc., Philadelphia, Pa.

### INSECTICIDES

American Agricultural Chemical Co., N.Y.C.

American Potash & Chemical Corp., Los Angeles, Calif.

Ashcraft-Wilkinson Co., Atlanta, Ga.

Berkshire Chemicals, New York City

Fairfield Chem. Div., Food Mach. & Chem. Corp., New York City

Geigy Agr. Chems., Div. Geigy Chem. Corp., N.Y.C.

Pennsylvania Salt Mfg. Co., of Wash., Tacoma, Wash.

Shell Chem. Corp., Agr. Chem. Div., Denver, Colo.

### IRON CHELATES

Geigy Agr. Chems., Div. Geigy Chem. Corp., N.Y.C.

### IRON SULFATE

Tennessee Corp., Atlanta, Ga.

### LEAD ARSENATE

American Agricultural Chemical Co., N.Y.C.

### LIMESTONE

American Agricultural Chemical Co., N.Y.C.

Ashcraft-Wilkinson Co., Atlanta, Ga.

National Lime & Stone Co., Findlay, Ohio

### MACHINERY—Acid Making and Handling

Monarch Mfg. Works, Inc., Philadelphia, Pa.

Stedman Foundry and Machine Co., Aurora, Ind.

Sturtevant Mill Co., Boston, Mass.

### MACHINERY—Acidulating

Stedman Foundry and Machine Co., Aurora, Ind.

### MACHINERY—Grinding and Pulverizing

Bradley Pulverizer Co., Allentown, Pa.

Poulson Co., Los Angeles, Calif.

Stedman Foundry and Machine Co., Aurora, Ind.

Sturtevant Mill Co., Boston, Mass.

# Buyers' Guide

## MACHINERY—Material Handling

Clark Equip. Co., Construction Mach. Div., Benton Harbor, Mich.  
The Frank G. Co., Libertyville, Ill.  
Link-Belt Co., Chicago, Ill.  
Poulsen Co., Los Angeles, Calif.  
Stedman Foundry and Machine Co., Aurora, Ind.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Sturtevant Mill Co., Boston, Mass.  
Tractomotive Corp., Deerfield, Ill.

## MACHINERY—Mixing and Blending

Munson Mill Mach. Co., Utica, N. Y.  
Poulsen Co., Los Angeles, Calif.  
Stedman Foundry and Machine Co., Aurora, Ind.  
Sturtevant Mill Co., Boston, Mass.

## MACHINERY—Mixing, Screening and Bagging

Poulsen Co., Los Angeles, Calif.  
Stedman Foundry and Machine Co., Aurora, Ind.  
Sturtevant Mill Co., Boston, Mass.

## MACHINERY—Power Transmission

Link-Belt Co., Chicago, Ill.  
Stedman Foundry and Machine Co., Aurora, Ind.

## MACHINERY

Superphosphate Manufacturing  
Link-Belt Co., Chicago, Ill.  
Stedman Foundry and Machine Co., Aurora, Ind.  
Sturtevant Mill Co., Boston, Mass.

## MAGNESIUM SULFATE

Berkshire Chemicals, New York City

## MANGANESE SULFATE

Tennessee Corp., Atlanta, Ga.

## MANURE SALTS

Potash Co. of America, Washington, D. C.

## METHOXYCHLOR

Geigy Agr. Chems., Div. Geigy Chem. Corp., N.Y.C.

## MINOR ELEMENTS

Geigy Agr. Chems. Div., Geigy Chem. Corp., N.Y.C.  
Tennessee Corporation, Atlanta, Ga.

## MIXERS

Munson Mill Mach. Co., Utica, N. Y.  
Stedman Foundry and Machine Co., Aurora, Ind.  
Sturtevant Mill Co., Boston, Mass.

## NITRATE OF POTASH

Berkshire Chemicals, New York City

## NITRATE OF SODA

American Agricultural Chemical Co., N. Y. C.  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Bradley & Baker, N. Y. C.  
McIver & Son, Alex. M., Charleston, S. C.  
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.  
International Min. & Chem. Corp., Chicago, Ill.  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## NITROGEN SOLUTIONS

Ashcraft-Wilkinson Co., Atlanta, Ga.  
Commercial Solvents Corporation, New York City  
Escambia Bay Chem. Corp., Pensacola, Fla.  
Lion Oil Company, El Dorado, Ark.  
Mississippi River Chem. Co., St. Louis, Mo.  
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.  
Phillips Chemical Co., Bartlesville, Okla.  
Sinclair Chemicals, Hammond, Ind.  
Sohio Chemical Co., Lima, O.

## NITROGEN MATERIALS—Organic

American Agricultural Chemical Co., N. Y. C.  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Bradley & Baker, N. Y. C.  
International Min. & Chem. Corp., Chicago, Ill.  
Jackie, Frank R., New York City  
McIver & Son, Alex. M., Charleston, S. C.  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## NOZZLES—Spray

Monarch Mfg. Works, Philadelphia, Pa.  
Spraying Systems Co., Bellwood, Ill.

## PARATHION

Ashcraft-Wilkinson Co., Atlanta, Ga.

## PHOSPHATE ROCK

American Agricultural Chemical Co., N. Y. C.  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Bradley & Baker, N. Y. C.  
International Min. & Chem. Corp., Chicago, Ill.  
McIver & Son, Alex. M., Charleston, S. C.  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## PHOSPHORIC ACID

American Agricultural Chemical Co., N. Y. C.

## PLANT CONSTRUCTION—Fertilizer and Acid

Link-Belt Co., Chicago, Ill.  
Stedman Foundry and Machine Co., Aurora, Ind.  
Sturtevant Mill Co., Boston, Mass.

## POTASH—Muriate

American Potash & Chemical Corp., Los Angeles, California

Ashcraft-Wilkinson Co., (Duval Potash) Atlanta, Ga.  
Bradley & Baker, N. Y. C.  
Duval Sulphur & Potash Co., Houston, Tex.  
International Min. & Chem. Corp., Chicago, Ill.  
McIver & Son, Alex. M., Charleston, S. C.  
National Potash Co., N. Y. C.  
Potash Co. of America, Washington, D. C.  
United States Potash Co., N. Y. C.

## POTASH—Sulfate

American Potash & Chemical Corp., Los Angeles, California

International Min. & Chem. Corp., Chicago, Ill.  
Potash Co. of America, Washington, D. C.

## PRINTING PRESSES—Bag

Schmutz Mfg. Co., Louisville, Ky.

## PYROPHYLITE

Ashcraft-Wilkinson Co., Atlanta, Ga.  
Pioneer Pyrophyllite Producers, Beverly Hills, Calif.

## REPAIR PARTS AND CASTINGS

Stedman Foundry and Machine Co., Aurora, Ind.

## SCALES—Including Automatic Baggers

Exact Weight Scale Co., Columbus, O.

Stedman Foundry and Machine Co., Aurora, Ind.

## SCREENS

Ludlow-Saylor Wire Cloth Co., St. Louis, Mo.  
Stedman Foundry and Machine Co., Aurora, Ind.  
Sturtevant Mill Co., Boston, Mass.

## SHOVEL LOADERS

Clark Equip. Co., Benton Harbor, Mich.  
Hough, The Frank G. Co., Libertyville, Ill.  
Tractomotive Corp., Deerfield, Ill.

## SOILTEST EQUIPMENT

The Edwards Laboratory, Norwalk, O.

## SPRAYERS

Monarch Mfg. Works Inc., Philadelphia, Pa.  
Spraying Systems Co., Bellwood, Ill.  
Baughman Mfg. Co., Jerseyville, Ill.

## SPREADERS, TRUCK

Baughman Manufacturing Co., Jerseyville, Ill.  
Highway Equipment Co., Cedar Rapids, Ia.

## STORAGE TANKS

Cole, R. D., Manufacturing Co., Newnan, Ga.

## SULFATE OF AMMONIA

American Agricultural Chemical Co., N. Y. C.  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.

Bradley & Baker, N. Y. C.  
Jackie, Frank R., New York City  
Lion Oil Co., El Dorado, Ark.

Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.  
Phillips Chemical Co., Bartlesville, Okla.  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## SULFATE OF POTASH—MAGNESIA

International Min. & Chem. Corp., Chicago, Ill.

## SULFUR

Ashcraft-Wilkinson Co., Atlanta, Ga.  
Texas Gulf Sulphur Co., New York City

Woodward & Dickerson, Inc., Philadelphia, Pa.

## SULFUR—Dusting & Spraying

Ashcraft-Wilkinson Co., Atlanta, Ga.

U. S. Phosphoric Products Div., Tennessee Corp., Tampa, Fla.

## SULFURIC ACID

American Agricultural Chemical Co., N. Y. C.  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Bradley & Baker, N. Y. C.  
International Min. & Chem. Corp., Chicago, Ill.  
Lion Oil Company, El Dorado, Ark.  
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.

## SUPERPHOSPHATE

American Agricultural Chemical Co., N. Y. C.  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Bradley & Baker, N. Y. C.  
Davison Chemical Co., div. of W. R. Grace & Co., Baltimore, Md.  
International Min. & Chem. Corp., Chicago, Ill.  
Jackie, Frank R., New York City  
McIver & Son, Alex. M., Charleston, S. C.  
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## SUPERPHOSPHATE—Concentrated

Armour Fertilizer Works, Atlanta, Ga.  
Bradley & Baker, N. Y. C.  
International Min. & Chem. Corp., Chicago, Ill.  
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## TALC

Ashcraft-Wilkinson Co., Atlanta, Ga.

## TANKAGE

American Agricultural Chemical Co., N. Y. C.  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Bradley & Baker, N. Y. C.  
International Min. & Chem. Corp., Chicago, Ill.  
Jackie, Frank R., New York City  
McIver & Son, Alex. M., Charleston, S. C.  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## TANKS—NH<sub>3</sub> and Liquid N

Cole, R. D. Manufacturing Co., Newnan, Ga.

## TOXAPHENE

Ashcraft-Wilkinson Co., Atlanta, Ga.

## TRUCKS—SPREADER

Baughman Mfg. Co., Jerseyville, Ill.  
Highway Equipment Co., Cedar Rapids, Ia.

## UREA & UREA PRODUCTS

Atkins, Kroll & Co., San Francisco, Calif.  
Bradley & Baker, N. Y. C.  
Grand River Chem. Div., Deere & Co., Tulsa, Okla.  
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.  
Sohio Chemical Co., Lima, O.

## UREA-FORM

Nitro-Form Agricultural Chemicals, Woonsocket, R. I.

## VALVES

Monarch Mfg. Works, Inc., Philadelphia, Pa.

## ZINC SULFATE

Tennessee Corp., Atlanta, Ga.

## FARM CHEMICALS



## **HEAVY SHIPPING PERIOD**

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Only by working every day of the year are we able to meet this peak season demand.

When quick potash shipments are required to keep your plants manufacturing at top speed, call on PCA, whose facilities are geared to your needs.



**POTASH COMPANY OF AMERICA**  
CARLSBAD, NEW MEXICO.

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Southern Sales Office . . . Candler Building, Atlanta, Ga.*

**EUREKA!  
IT'S URANA!**



**...the nitrogen  
that improves condition of  
mixed fertilizers...**

**The simple answer** to many fertilizer conditioning problems is to persuade the ammonium chloride salts formed in the ammoniation process to crystallize as cubes instead of in the shape of needles or ferns.

ARCADIAN® URANA Nitrogen Solutions provide this beneficial effect in ammoniation. Use URANA 15 (15% urea), URANA 12 (12% urea), or URANA 10 (10% urea) in preparing your mixed fertilizers and you get the crystallized cubes that do not bind or cake. The result is well-cured fertilizer with less conditioning, usually at lower cost.

This is only one of several advantages of ammoniating with URANA, NITRANA® and U-A-S\* Nitrogen Solutions. For other valuable aids developed through Nitrogen Division research, consult one of our technical service representatives. Their help is free to our customers.

**Arcadian®**

**PRODUCTS FOR  
PROFITABLE FARMING**

**Nitrogen Solutions**  
(Nitrana®, Urana® and U-A-S\*)  
**Anhydrous and Aqua  
Ammonia**  
**American Nitrate of Soda**  
**A-N-L® Nitrogen Fertilizer**  
**Urea Products**  
**Sulphate of Ammonia**  
\*Trade-mark

**NITROGEN DIVISION**

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Indianapolis 20, Ind. • Kalamazoo, Mich. • Columbia, Mo. • St. Paul 4, Minn.  
Atlanta 3, Ga. • Columbia 1, S. C. • San Francisco 3, Cal. • Los Angeles 5, Cal.

Allied Chemical & Dye Corporation



